U. S. DEPARTMENT OF AGRICULTURE

FARMERS' BULLETIN No. 1474

Rev.ed. follows

STAIN REMOVAL FROM FABRICS

HOME METHODS

XUM

INDEX TO STAINS

	Page
Acids	8
Alcohol paints or stains	23
Alkalis	9
Asphalt	27
Asphalt paint	27
Axle grease	27
Berries, cooked	13
Berries, fresh	14
Blood	9
Bluing	10
Aniline	11
Prussian	10
Ultramarine	10
Butter	11
Butter substitutes	11
Candle wax, colored	11
Candy	11
Chewing gum	11
Chocolate	12
Cocoa	12
Coffee	12
Cream	22
Cream soups	30
Creosote oil	27
Dandelion	15
Dyes	13
Egg	13
Enamel paint	22
Fly paper, sticky	13
Foliage, green	15
Fruits, cooked	13
Fruits, fresh	14
Glue	15
Grapefruit, *see* Fruits, fresh	14
Grass	15
Gravy	21
Grease	15
Gruel	30
Gums	16
Ice cream	16
Ink	17
India	17
Marking	17
Printing	18
Writing	18
Iodine	19
Iron rust	19
Leather	20
Lime	20
Linseed oil	20
Mayonnaise, *see* Salad dressings	25
Meat juice or gravy	21
Medicines	21
Metallic stains	21
Mildew	21
Milk	22
Mud	22
Mustard	22
Oil	15, 27
Cedar	16
Cod liver	16
Road	27
Paint	22
Alcohol paints or stains	23
Enamels	22
Oil paints	22
Water color	23
Paraffin or paraffin wax	24
Pencil marks	24
Indelible pencil	24
Lead pencil	24
Perspiration	24
Pickle, *see* Turmeric	29
Pitch, *see* Resins, Tar	25, 27
Pokeberry	25
Punch, *see* Fruits, cooked and fresh	13, 14
Resins and resinous substances	25
Road oil	27
Running colors	13
Salad dressings	25
Scorch	25
Shoe dressings	26
Black	26
Tan	26
White	26
Silver nitrate, *see* Marking ink	17
Sirups	27
Soap	26
Soot	27
Soup	30
Stove polish	27
Sugar sirups	27
Tar	27
Tea	28
Tin foil	28
Tobacco	28
Tomato vine	29
Turmeric	29
Urine	29
Varnish	22
Vaseline	29
Vinegar, *see* Acids	8
Walnut, black	30
Water-color paint	23
Water spots	30
Wax	11, 24
White sauces	30
Whitewash, *see* Lime	20
Wine, *see* Fruits, fresh	14

This bulletin is a revision of and supersedes Farmers' Bulletin 861, entitled "Removal of Stains from Clothing and Other Textiles."

Washington, D. C. Issued August, 1926

STAIN REMOVAL FROM FABRICS: HOME METHODS

Prepared by the Division of Textiles and Clothing, Bureau of Home Economics[1]

GENERAL PRINCIPLES OF STAIN REMOVAL

THE REMOVAL of stains is a necessary feature of the general care of clothing and household textiles. Most stains may be removed easily at home, if reliable methods are known and a few simple precautions taken. Prompt treatment is one of the most important rules. Changes in the character of the stain, brought about by drying, exposure to air, washing, ironing, or in other ways, often make it necessary to use stronger chemicals in removing old stains. However, miracles should not be expected as the result of amateur or even professional efforts at stain removal. Very often the staining substance has so attacked the fabric that it can not be removed without destroying the fibers.

NATURE OF THE STAIN

The nature of the stain should be known, if possible, before its removal is attempted, because this determines the treatment. If an unsuitable remover is used, the stain may be "set" so that its removal becomes difficult or even impossible. For example, if boiling water, which easily removes most fresh fruit stains, is applied to stains containing protein, such as those from milk, blood, eggs, or meat juice, it coagulates the albumin and makes it extremely difficult to remove.

KIND OF FABRIC

The kind of fabric upon which the stain occurs should also be known and the method of treatment chosen which will affect that particular fabric the least. In removing stains from fabrics made from two or more kinds of fibers, such as silk and cotton mixtures, the effect of the stain removers upon all of the fibers should be considered. No chemical should be used which would injure the most delicate of the fibers.

COTTON AND LINEN

Strong acids destroy cotton and linen and even weak ones attack these fabrics to some extent. Therefore, concentrated acids never should be used in removing stains from these fibers. When dilute

[1] Most of the experimental work on which this bulletin is based was done by Harold L. Lang and Anna H. Whittelsey of the former Office of Home Economics.

acids are employed, they should be neutralized afterward with a weak alkali, such as ammonia water, and removed by thorough rinsing; otherwise the acid may become concentrated upon drying and destroy the fibers. Generally speaking, alkalis do not attack cotton or linen fabrics to the extent that acids do. However, long-continued or repeated exposure to alkalis, especially in hot solution, weakens them. All bleaching agents are also somewhat harmful to these fibers and should be used with care and never in concentrated form or for extended periods of time.

WOOL AND SILK

Strong alkalis dissolve both wool and silk and even washing soda or strongly alkaline soap often seriously injures these fibers. The only alkalis that should be used in laundering or removing stains from wool and silk are the milder ones like borax or dilute solutions of ammonia. Dilute acids, with the exception of nitric, which weakens and turns the fibers yellow, do not attack wool and silk readily. Bleaching agents containing chlorine, such as ordinary bleaching powder, are very destructive to both wool and silk and should not be employed.

The use of very hot water on these fibers must be avoided, since it turns both wool and silk yellow, shrinks wool, and injures the finish of silk. Excessive rubbing felts wool, causing it to shrink and thicken, while silk fabrics are likely to be torn. The removal of stains from silk should be done with great care as the mineral salts that are often used to weight such fabrics tend to weaken them.

ARTIFICIAL SILK

Since artificial silk, now commonly called rayon by the trade, is manufactured by a number of different processes, the fibers encountered may vary somewhat. Most rayon is weaker when wet than when dry, and in some cases the strength is so impaired that these fabrics should be handled very carefully while in that condition. Boiling is likely to decrease their luster. Dilute acids are not usually harmful to them, but concentrated acids should not be used. If the artificial silk is composed of cellulose acetate, it will be dissolved immediately by concentrated acetic acid. Acetone, an organic solvent which is valuable for removing many stains, will also dissolve cellulose acetate silk. Since there is a great deal of this type of artificial silk manufactured, it is well to test a sample with these liquids before using them for stain removal. Alkaline solutions rapidly destroy artificial silk, and bleaching agents are often harmful and should be used with great care.

COLORED FABRICS

Bleaches and other chemicals strong enough to remove stains will usually attack dyestuffs. It is therefore necessary to handle colored fabrics more carefully than white ones. They should be treated rapidly and rinsed thoroughly. If the color changes shade when treated with an acid the original color can often be restored by a

weak alkali, such as ammonia solution or ammonia fumes. Acetic acid will often restore a color that has been changed by alkalis.

SUBSTANCES USED FOR STAIN REMOVAL

Almost all of the materials used for stain removal may be classified as absorbents, solvents, or bleaches, although there are a few miscellaneous ones whose action is different. Sodium thiosulphate ("hypo"), which forms colorless water-soluble compounds with iodine, and corrosive sublimate, which will act similarly with certain medicinal stains, are examples. These are discussed under the treatment of individual stains.

ABSORBENTS

Such substances as chalk, magnesium carbonate, fuller's earth, and corn meal are known as absorbents. When spread on stained fabrics, these often absorb the staining material. They can then be brushed off readily. Such materials are effective if the stain is light or freshly made, but they can not be relied upon when it is set or very extensive. They are harmless to all fibers.

To use the absorbent powders, lay the stained fabric upon a flat surface and spread a layer of the absorbent over the stain. Work it around gently so as not to pull the fibers. As soon as it becomes gummy, shake or brush it off, and repeat the process until the bulk of the stain is removed. Then apply another layer of the absorbent and allow it to remain overnight, or longer if necessary. This removes all traces of the stain, and in the case of slight stains the preliminary treatment is unnecessary. Then dust or brush off the absorbent thoroughly. If it is not convenient to let the stain stand overnight, place a layer of cloth or brown paper over the absorbent and apply a warm (not hot) iron for several minutes. In the case of stains made by solid fats, which must be melted before they can be absorbed, the use of the warm iron is necessary.

STAIN SOLVENTS

Water and such liquids as ether, wood or denatured alcohol, benzol, acetone, gasoline, chloroform, and carbon tetrachloride are common stain solvents. A large number of stains can be removed by water without harm to the fabric. Unless the stain is known to be insoluble in water and the fabric water spots or the colors run, it is best to try water first. Test by placing a little water on an inconspicuous part of the garment if there seems to be danger of injuring it.

The other solvents mentioned are particularly good for removing stains of a fatty or greasy nature. As the vapors from all organic solvents are injurious when inhaled in large quantities, they should be used out of doors or in a very well ventilated room.

Gasoline, naphtha, and ether are very inflammable and may be the cause of serious fires. For this reason it is not recommended that these be used in the home in quantities large enough to immerse an entire garment. Not only will gasoline take fire easily and often burn with serious explosions, but in dry atmospheres a garment saturated with gasoline will sometimes burst into flames owing to the static

discharge caused by rubbing one part of it against another. If small quantities of either gasoline or ether are used for removing spots, they should be plainly marked "inflammable," kept away from flames, and preferably used out of doors. Benzol and acetone are also inflammable. Some of the noninflammable grease spot removers sold under trade names consist entirely or in large part of carbon tetrachloride. All of the solvents mentioned above are harmless to all fibers, but water of course injures many fabric finishes and dyed materials.

BLEACHES

It is often necessary to bleach out a stain, but chemicals should be used carefully. Almost all of them will remove the color of the fabric as well as the stain and, if used in too concentrated a form or allowed to remain on the fabric too long, will weaken it. A number of the more common bleaches are given below. Reference to their use will be found under "Methods of Treating Individual Stains."

JAVELLE WATER

Javelle water may be used successfully in removing a number of stains, but should be applied only to uncolored cotton or linen materials, since it bleaches colors and rots silk, wool, and some kinds of rayon.

The solution usually called Javelle water (more correctly termed Labarraque solution) is prepared as follows: Dissolve one-half pound of washing soda in 1 quart of cold water. To this solution add one-fourth pound of ordinary bleaching powder (commonly called chloride of lime). Filter this liquid through a piece of muslin to remove the sediment which remains. Keep the clear liquid in tightly stoppered bottles.

In treating stains with Javelle water, stretch the stained portion over a bowl filled with water and apply the Javelle water to the stain with a medicine dropper. Do not allow the Javelle water to remain in contact with the fabric for more than one minute. If necessary, the entire garment may be placed in the liquid. Then apply a solution containing one-fourth ounce of sodium thiosulphate and one-eighth ounce of 36-per-cent acetic acid in 2 quarts of water. Sodium thiosulphate ("hypo") is found in many homes where amateur photography is being done and is very effective in removing the chlorine which remains in the fabric after treatment with Javelle water. Rinse thoroughly. Oxalic-acid solution may be used instead of the thiosulphate but is not so satisfactory.

If allowed to remain too long in contact with the fibers, Javelle water rots even linen and cotton materials. It should therefore always be followed very promptly by a solution of thiosulphate and the fabric rinsed thoroughly to remove all traces of the chemical. With persistent stains Javelle water and thiosulphate to neutralize it, may need to be applied several times. Commercial ink removers are similar in action to Javelle water and are very convenient for removing many stains besides ink spots.

POTASSIUM PERMANGANATE

Potassium permanganate can be used in removing certain stains from all white fabrics except rayon. One or more repetitions of the treatment may be necessary in the case of persistent stains. Potassium permanganate may also be used successfully upon many colored materials but should always be tried first on an unexposed portion of the goods in order to determine its effect on the dye. As it may harm delicate fibers, it should be used with great care. Prepare and use the permanganate as follows: Dissolve 1 teaspoon of the crystals in 1 pint of water and apply a little of this to the stain with a medicine dropper, a glass rod, or a clean cork, and allow it to remain for about five minutes. Remove any pink or brown stain left by the permanganate by applying one of the following chemicals:

Hydrogen peroxide, made very slightly acid (if not already so) with hydrochloric, acetic, oxalic, or tartaric acid. This treatment is suitable for wool. Follow by thorough rinsing.

Oxalic acid (poison) in saturated solution or lemon juice for cotton, linen, or silk. Follow by thorough rinsing.

HYDROGEN PEROXIDE

Hydrogen peroxide, as obtained for medical purposes, has usually been made slightly acid, to give it better keeping quality. For use in removing stains make a small quantity of the peroxide slightly alkaline with ammonia solution. Since hydrogen peroxide affects the fiber also, in the case of cotton and linen materials, follow it by very careful rinsing. Apply it to the stain with a medicine dropper, a glass rod, or a clean cork, or sponge the stain with it (see p. 6). The method of using it in connection with potassium permanganate is described above.

OXALIC ACID

Oxalic acid is poisonous and should be used carefully. The bottle in which it is stored must be marked "Poison" and kept out of the reach of children. To prepare a solution, dissolve as many of the crystals of the acid as possible in a pint of lukewarm water. Put into a bottle, stopper tightly, and use as needed. Apply this solution to the stain with a medicine dropper or glass rod and after allowing it to remain for a few minutes, rinse thoroughly in clean water (see p. 6). Neutralize with a solution of ammonia.

HYDROSULPHITES

Hydrosulphites are perhaps the most generally useful bleaching agents for stain removal, sodium hydrosulphite usually being employed. Stable forms are available under many trade names. They should be kept dry in tightly closed cans and not moistened until ready to use. The powder may then be moistened and worked directly onto the stain with the fingers, or it may be dissolved in water and the fabric wholly or partially immersed in the warm solution. These compounds are particularly useful in removing dye

which has stained the fabric and are effective on almost all stains which are not greasy in nature. They can not be used on colored material unless the treatment is very rapid and the fabric well rinsed as soon as the stain is removed. Even under such conditions, the color of the fabric is often removed with the stain.

GENERAL METHODS OF TREATING STAINS

SPONGING WITH WATER OR OTHER SOLVENT

If the nature of the stain is not known and it does not appear to be greasy, sponging with a wet cloth may be effective. However, it is always well to try the action of water on some inconspicuous part of the garment unless it is definitely known that the fabric will not water spot or the color be affected.

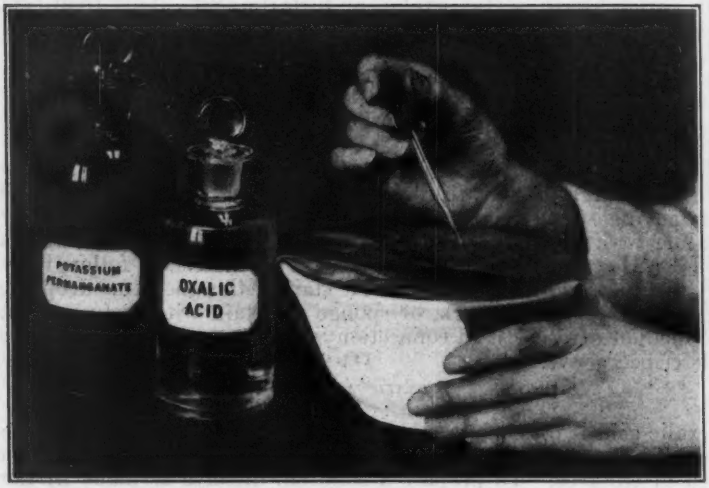


FIG. 1.—Chemicals may be applied to stains by stretching the garment over a bowl of clean water and dropping the chemical onto the stain from a medicine dropper

Spread the article on a flat surface in a good light. Lay the stained material with the wrong side up and apply the liquid to the back, so that the foreign substances can be washed from the fibers without having to pass through the material. A cloth folded several times to form a pad or, better, a clean piece of blotting paper may be placed under the stain to absorb the superfluous liquid. Change the pad or paper occasionally as it becomes soiled. Sponge with a clean, soft, lintless cloth which has been dipped in the liquid and wrung until partially dry. Do not have the cloth excessively wet. Use light brushing motions, spreading the moisture irregularly into the surrounding fabric in order to prevent rings.

APPLICATION OF CHEMICALS

Chemicals should not be used until after water has been tried, unless it is definitely known that water will not remove the stain or

that the fabric is unsuitable for water treatment. There is always danger that chemicals will attack the fiber.

However, there are a few common chemicals which are necessary to remove some stains, and these should be kept in every household. As some are poisonous, they should not be kept in the family medicine cabinet or the pantry. Chemicals most commonly used in removing stains are Javelle water, potassium permanganate, oxalic acid, ammonia water, and carbon tetrachloride. The utensils needed are a medium-sized bowl, a medicine dropper, a glass rod with rounded ends, several pads of cheesecloth or old muslin, a small sponge, and sheets of white blotting paper.

If the effect of the stain remover upon the fiber or color is not known, try it by applying a little to a sample or to an unexposed portion of the goods.

Work rapidly when using chemicals to remove stains, so as to give them as little time as possible to act on the textile fibers. Many

FIG. 2.—A glass rod with rounded ends is convenient for applying chemicals to stains. A pad of cloth beneath the stain absorbs any excess of the chemical

brief applications of the chemicals, with rinsing or neutralizing after each application, are preferable to allowing them to remain on the stain for a long time.

Stretch the stained portion of the garment over a bowl of clean water and apply the chemical with a medicine dropper, as shown in Figure 1. The chemicals may be rinsed out quickly by dipping in the clean water. Another method is to place the stained portion over a pad of folded cloth and apply the chemical with a glass rod as shown in Figure 2. The neutralizing must be thorough, and should be followed by rinsing in several changes of water.

The chief difficulties encountered by the inexperienced are ring formation and roughening of the fabric. Rings are caused by the excess dressing of the fabric which runs back into the edge of the damp portion and is deposited there as the fabric dries. They are

overcome by skill in handling. After a spot is removed it is well to go over it lightly with a moist sponge or cheesecloth, absorbing the surplus liquid and barely dampening the surrounding fabric enough to spread the dressing out in an irregular, indistinct line. It is sometimes helpful to go over the spot with a piece of cheesecloth moistened in denatured or wood alcohol. Do not have the cloth too moist, as some colors are affected by alcohol. Rapid drying is always a wise precaution in all cases of stain removal where there is danger of ring formation. A fan or a hair drier can be used to good advantage or the garment may be hung where a good breeze strikes it. If it is impossible to prevent rings by these methods, it may be necessary to wash the garment or to dip it in gasoline. This gasoline dip is the remedy generally used by commercial cleaners (see p. 3).

A roughened fabric is due, of course, to too hard and too much rubbing. Only practice can bring the light touch which is part of the skill of an experienced cleaner. The use of a medicine dropper as described is a great advantage.

METHODS OF TREATING INDIVIDUAL STAINS

In cases where the nature of the stain is not known it should be first sponged with cold water, provided that the fabric is not injured by water (see p. 6). Hot water should be avoided in treating unknown stains until after other substances have been tried, since it will set many stains and make their removal more difficult. If the stain is not removed by cold or warm water, chemicals should be applied.

ACIDS

With the exception of nitric acid, acids do not generally produce stains upon white fabrics but often even in dilute form change or destroy the color of dyed materials. Most acids do, however, dissolve or weaken textile fibers, especially those from plants. Acid spots on textiles, therefore, should be removed at once by water or neutralized by some alkaline solution. Use one of the following:

1. **Water.**—If the material is washable, rinse the spot several times in a large volume of water. This checks the action of the acid, but usually has no effect upon any discoloration due to it.

2. **An alkaline substance.**—Apply a weak alkali to the acid spot. The alkali forms a salt with the acid, and this must be removed later by rinsing or sponging with water. The acid should be neutralized completely with the alkali or the discoloration may reappear after a while. To determine when the acid spot is completely neutralized, touch it with a piece of litmus paper, moistened with pure water. Litmus paper, which may be purchased at the drug store, is turned red by acids and blue by alkalis. If litmus paper is not available, touch the spot with the tongue. If alkaline, it will taste bitter; if acid, it will taste sour. Any of the following may be used to neutralize an acid spot:

Ammonia. If the spot is slight, neutralize it by holding it in the fumes from an open bottle of strong ammonia solution. This is a good method to use if the fabric water spots easily; otherwise the ammonia solution may be applied directly. However, some dyes are affected by ammonia. To guard against this, have dilute acetic acid

or white vinegar convenient and apply if there is an undesirable color change.

Sodium bicarbonate (baking soda). Sprinkle this on both sides of the stain, moisten with water, and allow to stand until the acid is neutralized (at that point the effervescence will cease). Remove the excess by rinsing with water.

Ammonium carbonate. Apply in the same way as sodium bicarbonate or use a 10-per-cent solution.

ALKALIS

Dilute alkalis have little effect on cotton and linen, but strong alkalis cause the fibers to swell and become yellow and the cloth to contract. Wool and silk, on the other hand, are yellowed or destroyed by alkalis even in dilute solutions. The color of any fabric may be changed or destroyed even though the fiber is not noticeably affected by the alkali. It is important, therefore, to neutralize alkali spots at once. Use any of the following agents:

1. **Water.**—If the material is washable, rinse thoroughly with water. This is generally sufficient in the case of such alkalis as washing soda and ammonia.

2. **A mild acid.**—Apply the acid with a cloth until the fabric changes back to its original color, or until the stain is slightly acid as shown by its reaction to litmus paper or by the taste. Then rinse the treated spot thoroughly in water. In the case of colored goods rub the spot dry, using a piece of the same material as the stained fabric, if possible. Use any of the following mild acids:

Lemon juice. Squeeze the juice on the stain. As long as the spot remains alkaline the juice is bright yellow in color, but when the spot becomes acid the color disappears almost entirely. Apply the lemon juice until this color change takes place.

Vinegar. If the vinegar leaves a spot, sponge with water.

Acetic acid. Apply a 10-per-cent solution of acetic acid to the stain and remove the excess by rinsing or sponging.

BLOOD

Hot water will set the protein in blood stains and therefore should never be applied until after treatment with cold or lukewarm water. Use any of the following agents:

1. **Cold or lukewarm water.**—If the material is washable, soak the blood stains or rub them in the water until they turn light brown in color; that is, until most of the coloring matter is dissolved. Then wash the material in hot water. For stains on silk or wool, sponge with cold or lukewarm water (see p. 6).

2. **Ammonia solution.**—If the material is washable, soak in a solution containing about 1 ounce (2 tablespoons) of household ammonia to 1 gallon of water, until the stains are loosened. Then wash in the usual manner. For old stains ammonia is somewhat more satisfactory than soap.

3. **Hydrogen peroxide.**—Sponging with a little hydrogen peroxide (see p. 5) often will remove the last traces of blood stains after the main part has been removed by cold or lukewarm water, as described

above. This agent can be used on all fibers provided it does not injure the color of the material.

4. **Javelle water.**—Use Javelle water (see p. 4) only as a last resort and not on wool or silk.

5. **Starch.**—Raw starch mixed to a paste with cold water may be used for stains on thick materials, such as flannel and blankets, which can not conveniently be soaked in water. Apply the paste thickly to the stain and brush it away when it becomes dry. Repeat the application until the stain is removed.

BLUING

Three types of laundry bluing are in common use—ultramarine, Prussian, and aniline. Since they differ chemically, spots due to them require different treatment. It is not difficult to determine to which type a blue belongs, and methods for doing this are suggested under the three following headings:

ULTRAMARINE BLUE

The commercial blues which come in balls or blocks with directions to wrap them in a piece of flannel or other cloth and shake them about in the water to be blued are generally ultramarine. This is a finely divided, insoluble substance, which remains suspended in the water if it is stirred sufficiently but which settles on long standing. Use any of the following in removing stains caused by ultramarine blue:

1. **Cold water.**—Soak fresh stains or rinse them in an abundance of cold water.

2. **Soap and water.**—Wash the stains as in ordinary laundering, with an abundance of soap, and rub thoroughly. This treatment will remove stains which are not removed by soaking.

3. **Dilute acid.**—Hydrochloric acid, U. S. P., diluted with 4 times its volume of water; or acetic acid, 10-per-cent solution, will dissolve heavy stains of this kind. Rinse the material thoroughly after treatment with the acid.

PRUSSIAN BLUE

The liquid bluing used commonly in the home laundry is in most cases a soluble variety of Prussian blue, commercially known as Chinese blue or soluble blue. It is greenish blue in color and soluble in water. To determine whether a bluing is of this kind, place a few drops in a glass, add a small quantity of a dilute solution of lye, potash, or washing soda, and warm by holding the glass in boiling water. A flaky, reddish-brown substance (ferric hydroxide) will form when Prussian blue is present.

Prussian or Chinese blue is sometimes the cause of yellow discolorations or spots upon white clothes. If the clothes are not rinsed free from strong soap, washing soda, or other alkali used in washing before they are blued with Prussian blue, the alkali remaining on the clothes reacts with the bluing and forms ferric hydroxide, which is deposited upon the clothes. This is set by subsequent drying and ironing, and is chemically identical with iron rust. For methods of removing these stains see "Iron rust," page 19.

Clothes are occasionally overblued with Prussian, as with other bluings, or may become streaked with the bluing if it has not been mixed evenly with the water. To overcome this condition the following treatment is recommended:

1. **Cold water.**—Rinse the stains in an abundance of cold water. This is effective only for very fresh stains.

2. **Boiling water.**—If cotton or linen, boil the material until the stains disappear. Excessive boiling, however, tends to yellow fabrics if there is soap or other alkaline substances present.

ANILINE BLUES

The aniline or coal-tar blues probably are used less commonly in the household than the other blues, but are employed frequently in commercial laundries. They are sold usually in the form of small crystals or of a powder having a dark-blue or iridescent color and are soluble in water, being in this respect different from ultramarine blue. The fact that alkali gives no precipitate with them distinguishes them from Prussian blue. Stains from aniline blues may be removed by the same methods used for those from Prussian blues.

BUTTER AND BUTTER SUBSTITUTES

Stains from butter and butter substitutes are essentially grease spots, although they contain, besides the fat, small quantities of salt, casein, and sometimes coloring matter. Since the salt and casein usually are carried away mechanically when the fat is removed, the reagents and methods for removing butter spots are the same as for spots from any solid or semisolid fat (see "Grease and oils," p. 15). The coloring matter is also removed by the grease solvents.

CANDLE WAX (COLORED)

Candle-wax stains usually consist of paraffin colored with pigment or dye. Remove the paraffin as completely as possible (see "Paraffin or paraffin wax," p. 24). Then dissolve the dye remaining on the fiber by sponging with wood alcohol. These also are effective: Carbon tetrachloride, chloroform, acetone, or benzol (see p. 3).

CANDY

Candy stains are due to the sugar sirup and any coloring matter or chocolate which may be present.

1. **Laundering.**—If the material is washable, ordinary laundering is sufficient.

2. **Water.**—Sponge with clear warm water in other cases. If dye or chocolate stains remain, follow instructions given under "Dyes and running colors," page 13 and "Chocolate and cocoa," page 12.

CHEWING GUM

Chewing gum usually contains a gum known as chicle which has been boiled down, flavored, and sweetened. Resins of various kinds may replace the chicle.

1. **Water.**—If the material is washable, soften the gum stain with egg white and then wash.

2. **Carbon tetrachloride.**—Prolonged treatment with carbon tetrachloride is usually satisfactory, although it may be necessary to remove the traces of sugar by sponging with water. Treatment alternately with carbon tetrachloride and water is often effective.

CHOCOLATE AND COCOA

Stains from chocolate and cocoa are composed of fat, resinous coloring matter, fibrous material, starch, sugar, and sometimes milk solids. Chocolate and cocoa prepared as beverages differ from cake chocolate in containing a larger proportion of milk and less fat, but none of these stains are set by hot water. Part of the stains from cake chocolate, confectionery, frosting, and the like, can be scraped off with a dull knife.

1. **Soap and hot water.**—If the material is washable, this is often all that is necessary, but Javelle water (see p. 4) may be used on cotton or linen to remove any persistent stain.

2. **Wood alcohol and ammonia.**—Soak the stained portion of the fabric in wood alcohol made alkaline with ammonia solution. This is a particularly effective method.

3. **Grease solvents.**—If the fabric is not washable, grease solvents (see p. 3) will dissolve the fatty contents of the stain and the remainder can be removed by hydrogen peroxide (see p. 5).

COFFEE

The brown stains from coffee are due, at least in part, to certain compounds formed in the roasting process, which are soluble in water. Alkalis, such as soap, Javelle water, washing soda, ammonia, and the caustic alkalis, change the color of coffee stains to a bright yellow. The stains are not more difficult to remove after this change, although the treatment with alkali may cause a stain to appear much more distinct than before. Fresh coffee stains usually are not difficult to remove, but the last trace of old stains sometimes proves resistant. Cream in the coffee often necessitates the use of grease solvents in addition to other reagents. If the fabric is washable, use method 1, 2, 3, or 4; if not washable, use method 5, 6, or 7.

1. **Soap and water.**—Fresh stains and most old ones on washable materials can be removed by ordinary laundering. A slight trace sometimes remains in the case of very heavy or old stains. Drying the material in the sun will frequently remove these or a bleaching agent (see p. 4) may be employed.

2. **Boiling water.**—Pour boiling water on the stain from a height of 2 or 3 feet. This is effective upon stains which are not more than a few hours old.

3. **Potassium permanganate.**—See page 5.

4. **Javelle water.**—This agent (see p. 5) is effective in some cases in removing stains which remain after treatment with soap and water but is less satisfactory than potassium permanganate. Do not use Javelle water on wool or silk.

5. **Cold or lukewarm water.**—If the stains are on wool or silk material, sponge with cold or lukewarm water. If a grease spot from the cream remains after the spot has dried, remove it by the use of grease solvents (see p. 3).

6. **Damp cloths and a hot iron.**—Fairly good results are obtained in removing small coffee stains from light-colored silk material by placing the stain between clean, damp cloths and pressing the whole with a hot iron.

7. **Hydrogen peroxide.**—Sponge nonwashable materials with a very little clear water and then use hydrogen peroxide solution (see p. 5).

DYES AND RUNNING COLORS

As the dyes of textiles differ greatly in chemical composition and as it is impossible in most cases to know the character of the color, different methods must be tried, beginning with the simplest. It is impossible to remove some of these stains entirely. Each of the agents named below is satisfactory in some cases, but it should be remembered that they are not guaranteed to be successful for all stains.

1. **Water and sunlight.**—If the material is washable, rinse the stains in cold or warm water, or soak them for 10 to 12 hours if necessary, and then dry in the sun. Repeat the treatment if the stains are not removed entirely the first time. Spots on woolen and silk materials sometimes may be removed by soaking or washing in cold water.

2. **Hydrosulphite.**—One of the hydrosulphites (see p. 5) is the most satisfactory for general purposes.

3. **Javelle water.**—Do not use Javelle water (see p. 4) on wool or silk.

4. **Hydrogen peroxide.**—Make hydrogen peroxide slightly alkaline with ammonia solution and use particularly for stains on white silk or wool. Soak the stains in this solution until they disappear and then rinse thoroughly (see p. 5).

EGG

The chief constituents of egg stains are albumen, or egg white, and fat, of which the yolk contains about 33 per cent. A yellow pigment is also present in the yolk. Heat, which coagulates albumen, renders egg stains somewhat difficult to remove; therefore hot water should never be applied first. Sometimes a large part of the stain hardens on the surface of the material and may be scraped off with a blunt knife. Use cold water followed by one of these agents:

1. **Hot water and soap.**—If the material is washable, use these as in ordinary laundering.

2. **A grease solvent.**—Allow the stained place to dry after being sponged with cold water. Then apply the grease solvent (see p. 3).

FLY PAPER (STICKY)

See "Resins and resinous substances," page 25. Carbon tetrachloride and benzol are particularly effective.

FRUITS AND BERRIES (COOKED)

The stains of cooked fruits, including small fruits and berries, are somewhat different in character from those of the same fruits when fresh. More sugar usually is present, and the chemical nature of the tannin compounds and coloring matters apparently is altered in some way by the cooking. In many cases these changes render the stains

much easier to remove than those of fresh fruit, and they often disappear during ordinary laundering. Stains from some cooked fruits, however, especially those that are dark red and purple, are similar to those from fresh fruit in being set by alkaline substances. Use one of the following agents:

1. **Boiling water.**—If the material is washable, use method 1 under "Fruits and berries (fresh)."

2. **Warm water.**—Sponge delicate fabrics with warm water.

FRUITS AND BERRIES (FRESH)

Most fruits contain coloring matter which often causes persistent stains on textiles. Practically all fruit stains, when they are fresh and still moist, can be removed with boiling or even warm water. After they have dried they become much more difficult to remove. This is true especially of stains from peaches and from red or purple berries. (For "Pokeberry" stain, see p. 25). Such stains in many cases are set by soap and other alkaline substances, the red color changing to a green or blue and becoming much more resistant to treatment. Some fruit stains may safely be attacked with soap and water; but as the majority are set by alkalis, it is better to avoid the use of soap on all fresh-fruit or berry stains.

The citrus fruits, such as grapefruit and lemon, often produce very persistent stains. These develop markedly if the fabric is pressed with a hot iron before being washed. Although such stains are sometimes removed by ordinary laundering, bleaches may be necessary. Potassium permanganate (see p. 5) is particularly effective. The color of some materials may be affected by the acids present in fruits such as these. However, the color can generally be restored by the methods used for acid stains (see p. 8).

Fresh fruit stains are more difficult to remove from silk and wool fabrics, although the stable hydrosulphites are valuable agents if the material is white. Oxalic-acid solution can also be used on such white fabrics. Sponging with a 10-per-cent solution of acetic acid is sometimes helpful when stronger chemicals can not be used on very delicate colored fabrics. Stains remaining on silk or wool (white or dyed with fast colors) after sponging with warm water frequently can be removed with a little hydrogen peroxide, made slightly alkaline with ammonia.

1. **Boiling water.**—If the stain is on white or fast-colored washable material, stretch the stained material over a bowl or other vessel, hold it by a string or an elastic band, if necessary, and pour boiling water upon it from a teakettle held at a height of 3 or 4 feet, so that the water strikes the stain with some force. With some stains, especially those in which fruit pulp is present, a litle rubbing alternated with applications of boiling water is helpful. A stain remaining after this treatment oftentimes can be bleached out by hanging the wet material in the sun to dry.

2. **Lemon juice and sunlight.**—Stains remaining after treatment with boiling water can often be bleached by moistening with lemon juice and exposing to the bright sunlight.

3. **Acetic or oxalic acid.**—A stain which turns blue or gray and can not be removed readily by boiling water sometimes can be loosened by moistening with acetic acid (10-per-cent solution) or oxalic

acid (see p. 5). This restores its original color and renders it more easily soluble in the boiling water. If necessary, apply the acid several times, alternating with boiling water.

4. **Hydrosulphites.**—Stable hydrosulphites (see p. 5) are very satisfactory for removing fruit stains from any white fabrics.

5. **Javelle water.**—Javelle water (see p. 4) is effective for white cotton or linen materials but should not be used on wool or silk.

6. **Potassium permanganate.**—See page 5.

7. **Potassium acid oxalate.**—This is sometimes sold under the name of "salts of lemon" or "salts of sorrel." Treat the stains with boiling water and then boil them in the acid oxalate solution. A 3-per-cent solution made by diluting a saturated solution (which contains about 6 per cent of the oxalate at ordinary temperature) with an equal volume of water is satisfactory.

GLUE

Glue is soluble in water, but if it has become thoroughly dried, long soaking is necessary before it becomes soft enough to dissolve completely. Use one of the following agents in removing glue spots:

1. **Water.**—If the material is washable, soak the spot in warm water. Occasionally it is necessary to boil the stained material.

2. **Acetic acid.**—Sponge the spot with dilute acetic acid using absorbents such as clean blotters or a pad of soft cloth. White vinegar may be used instead of the acid but is not always so satisfactory.

GRASS, DANDELION, AND OTHER FRESH GREEN FOLIAGE

The green stains from grass or fresh foliage are due to chlorophyll, the coloring matter present in green plants. Use one of the following agents in removing stains of this character:

1. **Hot water and soap.**—If the material is washable, use hot water and soap as in ordinary laundering, rubbing the stain vigorously. Remaining traces may be bleached out with Javelle water (see p. 4) if the material is cotton or linen, or potassium permanganate (see p. 5). These bleaches will remove the dark-brown stains caused by the juice of the dandelion.

2. **Ether or wood or denatured alcohol.**—Apply by sponging (see p. 6). This is useful on fabrics that laundering might injure.

GREASE AND OILS

Fresh grease spots may consist of the pure fat or oil. Old grease spots or stains from automobile, wheel, or machine greases, usually contain more or less dust, dirt, or fine particles of metal. (For road oil and creosote oil, see p. 27.) Sometimes it is possible to scrape or wipe much of the adhering grease from a stained material. After this has been done there is a choice of three general methods of treating the stain itself: Wash it with soap and warm water to remove the grease; or absorb the grease with dry substances; or dissolve the grease in an organic liquid. Use one of the following agents:

1. **Warm water and soap.**—Grease spots usually can be removed from washable materials with warm water and soap as in ordinary laundering if care is taken to rub the particular spot thoroughly. Soaps containing naphtha or kerosene are efficient.

102297°—26——3

2. **Absorbents.**—Use blotting paper, fuller's earth, brown paper, French chalk, powdered magnesia, or white talcum powder for fine materials; corn meal or salt for carpets, rugs, and other coarse materials. The use of absorbents generally is effective only on spots of grease or oil unmixed with particles of dirt or metal. The advantages of using them are that they do not wet the fabric or leave rings as often happens when water or grease solvents are employed.

3. **Organic solvents.**—Carbon tetrachloride, chloroform, ether, gasoline, naphtha, and benzol (see p. 3) are effective in the removal of common grease and cedar and other vegetable oils. Carbon tetrachloride is best for removing cod-liver oil, although a bleaching agent (see p. 4) may also be necessary if these stains are old.

Place a pad of clean cloth or a white blotter beneath the stain and change it as soon as it becomes soiled. Sponge the stain with a clean cloth, preferably a piece like the stained material, moistened with the solvent. To prevent the spreading of the grease and solvent, it is best to use small quantities of the solvent at a time and to work from the outside of the spot toward the center. It is well also to surround the stain with a ring of French chalk or other absorbent mentioned in method 2. After applying the solvent rub the spot with a clean cloth until it is thoroughly dry.

In removing grease spots which contain dirt or fine particles of metal, more rubbing and a larger quantity of solvent are necessary. It is best to apply the solvent from the wrong side of the material so that the particles will be washed mechanically from the fibers onto the pad of cloth placed underneath. If the spot does not yield to this treatment, immerse it in a small bowl of the solvent, and brush it gently with a small, soft brush. The brushing serves to loosen the insoluble particles, which then fall to the bottom of the bowl.

Generally if the stained place must be dipped in the solvent, it is more satisfactory to immerse the whole article finally in clean solvent, which prevents the formation of rings (see p. 7). If sufficient solvent is not at hand for this, the ring usually can be removed by careful and patient sponging with small quantities of fresh solvent. Replace the cloth, pads, or blotter, often as suggested above, and work from the wrong side of the material.

A paste made by mixing the solvent with French chalk, magnesia, or other white absorbent is often used. Spread the paste over the spot, leave it until thoroughly dry, and brush it off. Repeat this treatment if necessary. The spreading of the solvent and the formation of a ring will be avoided to a considerable extent in this way. The method is especially useful for cleaning light-colored unwashable materials, laces, and the like.

GUMS

Many gums such as gum arabic and cherry-tree gum are soluble in water. For other so-called gums, see "Chewing gum," page 11, and "Resins and resinous substances," page 25.

ICE CREAM

Ice cream stains are similar to those of milk or cream, except that they always contain sugar, sometimes eggs, and often chocolate, fruit, or flavorings. If stains from these added materials persist

after the ice cream itself has been removed, special methods must be used, such as for "Fruits and berries (fresh)," page 14; "Fruits and berries (cooked)," page 13; "Coffee," page 12; "Chocolate and cocoa," page 12. Use one of the following agents:

1. **Soap and water.**—If the material is washable, use soap and water for stains in which no highly colored fruit or other substance is present.

2. **Cold or lukewarm water.**—Sponge the stains thoroughly with water (see p. 6). If, on drying, a grease spot from the cream remains, remove it by the methods suggested for grease spots (see p. 15).

INK

INDIA INK

Genuine Indian ink is finely divided carbon mixed with gum and formed into a cake which, when used, is rubbed up with water. Drawing inks often contain shellac and borax in addition to the gum. Finely divided carbon or colored pigments may be added. If these have penetrated the fabric deeply they are impossible to remove completely. Wood or denatured alcohol, glacial acetic acid, chloroform, or gasoline (try in the order named) are helpful in dissolving the waterproofing ingredients and mechanically removing the carbon. See "Printing ink," page 18.

MARKING INK

So-called indelible or marking inks are of two common types: Those with an organic dye, usually aniline black, as a basis, and those containing silver nitrate or other silver compound.

Ink of the aniline-black type may be recognized by the directions for its use, which generally state that the articles marked with it must not be ironed until after they have been washed. Aniline-black inks are remarkably fast, and it is practically impossible to remove them after they have once become dry. None of the methods given for the removal of silver-nitrate ink stains are effective on aniline-black ink stains, nor do most of the methods used for ordinary writing-ink stains give satisfactory results.

Ink of the silver-nitrate type may also be recognized generally from the directions for its use, which state that articles marked with it must be laid in the sun or pressed with a warm iron before they are washed. This is to bring about the precipitation of metallic silver, which gives the black or brown color to the marks. Use one of the following agents in removing stains from silver-nitrate inks:

1. **Iodine and sodium thiosulphate ("hypo").**—Moisten with a few drops of tincture of iodine, sponge out and then remove with a solution of sodium thiosulphate made by dissolving several crystals in one-half cup of water.

2. **Corrosive sublimate (poison).**—A dilute solution of this chemical is very effective, but it is so poisonous that its use is not recommended unless extra precautions are taken to keep it from the fingers and to remove all traces of it from the vessels used.

3. **Javelle water.**—If the stain is on white cotton or linen, Javelle water (see p. 4) may be applied repeatedly until the color of the spot disappears. Then soak the stained place in ammonia solution to remove the silver chloride formed.

PRINTING INK

The coloring matter of black printing ink consists of finely divided carbon, usually in the form of lampblack. This is suspended in linseed oil with resin, turpentine, etc. Colored printing inks are obtained by adding colored pigments instead of carbon. Stains from ink of this type are very similar to paint stains. Use one of the following agents for removing printing-ink stains:

1. **Soap and water.**—If the material is washable, fresh stains may be removed by applying an abundance of soap and water and rubbing thoroughly.

2. **Lard.**—Rub the stained place with lard and work it well into the fibers. Follow with soap and water, as in method 1.

3. **Turpentine.**—Soak for a few minutes in turpentine and then sponge out with chloroform, ether, or wood alcohol.

WRITING INK

The coloring matters commonly used in writing inks include the following: Combinations of logwood or nutgalls with ferrous or ferric salts or with salts of other metals; aniline dyes, which are used either alone or with coloring matters of the type mentioned above; finely divided carbon in the form of lampblack. Colored inks are usually solutions of aniline dyes. Gums, sugar, or glycerine often are added to thicken an ink and hold the coloring matter in suspension, and phenol may be used to keep it from molding.

On account of the differences in the composition of writing inks, it is impossible to find agents which are equally effective in removing all ink spots. Each of the agents mentioned below is satisfactory with some type of ink. For an ink spot of unknown composition, it is necessary to try various agents, beginning always with the simplest and that least likely to injure the fabric.

If the ink has been spilled on the carpet, first apply absorbents as in method 1. These are more satisfactory than the following methods which will remove the color from the carpet unless used very carefully. Try repeated applications of oxalic acid (method 4) or potassium permanganate (method 6), or rub with the cut surface of a lemon, squeezing on the juice and rinsing between applications with a clean, wet cloth until no more ink can be removed. Rub the spot then with a clean, dry cloth. After the carpet is dry, brush up the nap with a stiff brush or a cloth. For ink stains on other fabrics, use one of the following:

1. **Absorbents.**—To a moist stain apply corn meal, salt, French chalk, fuller's earth, magnesia, or talcum powder to remove any ink not absorbed by the fibers and to keep it from spreading. For a large ink spot, apply one of these substances before trying other agents. Work the absorbent around with a blunt instrument and renew it when it becomes soiled. When the dry absorbent fails to take up more ink, make it into a paste with water and apply again.

2. **Soap and water.**—If the fabric is washable, soap and water as in ordinary laundering is satisfactory for some types of ink.

3. **Milk.**—Soak the stains for a day or two, if necessary, changing the milk as it becomes discolored. Pasteurized milk usually is not so satisfactory for this purpose as milk that has not been heated.

4. **Oxalic acid.**—Soak the stains for a few seconds in a saturated solution of oxalic acid (see p. 5), then rinse in clear water, and finally in water to which a few drops of concentrated ammonia solution have been added.

5. **Potassium acid oxalate.**—Soak the stains for several hours, if necessary, in a solution of 2¼ teaspoons of potassium acid oxalate ("salts of lemon" or "salts of sorrel") dissolved in one-half pint of water.

6. **Potassium permanganate.**—Potassium permanganate (see p. 5) is satisfactory for stains on many delicate fabrics as well as on ordinary materials.

7. **Javelle water.**—Do not use Javelle water (see p. 4) on silk or wool.

8. **Commercial ink removers.**—These are generally satisfactory if the directions furnished with them are followed and the excess of the substance is removed by thorough rinsing in clean water.

9. **Hydrogen peroxide.**—See page 5.

10. **Acids.**—Citric or tartaric acid (2 tablespoons to one-half cup of water), lemon juice, or dilute hydrochloric acid may be used. Apply the citric or tartaric acid in the same way as oxalic acid, method 4. In the case of lemon juice, keep the stain moistened and exposed to the sun. In the case of hydrochloric acid, moisten the stain with it and then rinse thoroughly.

11. **Hydrosulphites.**—Use as directed on page 5.

12. **Sodium perborate.**—Use cold in saturated solution. Soak the stain in it for one or two days, if necessary. This is effective in removing some red ink stains.

IODINE

Iodine dropped on unstarched material makes a brown or yellow stain. The presence of starch causes the stain to become deep blue or black, and the heat of ironing sometimes turns it a dark brown.

1. **Soap and water.**—If the material is washable, soap and water will often remove a fresh stain.

2. **Denatured or wood alcohol.**—Sponge the material (see p. 6). This agent can often be used on materials which water would injure.

3. **Ammonia solution.**—Sponge the stain with a dilute solution of ammonia (see p. 6).

4. **Sodium thiosulphate ("hypo").**—Immerse the stains in a solution containing 1 tablespoon of this chemical to 1 pint of water.

5. **Sodium sulphite.**—Apply in same way as sodium thiosulphate.

IRON RUST

Iron-rust stains often come from rusty clothes wringers or lines, or from the careless use of laundry bluing of the Prussian-blue type (see p. 10). Use one of the agents below for iron-rust stains on white washable materials. In the case of colored materials, try the effect of the agent first on a sample or in an inconspicuous place.

1. **Lemon juice.**—Spread the stained place over a vessel of actively boiling water and then squeeze lemon juice on the stain. After a few minutes, rinse the fabric, and repeat the process. This method is rather slow, but does not injure delicate white cottons or linens.

2. **Lemon juice and salt.**—Sprinkle the stain with salt, moisten with lemon juice, and place in the sun. Add more lemon juice if necessary.

3. **Potassium acid oxalate.**—Immerse the stain in a solution of one-half teaspoon of potassium acid oxalate ("salts of lemon" or "salts of sorrel") to 1 pint of water. More crystals may be added if necessary. Boil until the stain disappears, and then rinse thoroughly.

4. **Oxalic acid.**—Prepare a saturated solution of oxalic acid (see p. 5), spread the fabric over a bowl of hot water and apply the solution to the stains, or put the crystals of the acid directly on the fabric and moisten with hot water. Rinse in hot water, and repeat until the stains disappear.

5. **Tartaric acid.**—Boil the stained place in a solution of 1 teaspoon of the acid to 1 pint of water until the stain disappears, and rinse thoroughly.

6. **Cream of tartar.**—Boil the stained place in a solution containing 4 teaspoons of cream of tartar (potassium acid tartrate) to 1 pint of water. Rinse thoroughly.

7. **Citric acid.**—Immerse the stain in a solution of 1 teaspoon of citric acid to 1 pint of water and boil for 15 minutes or longer. Rinse thoroughly.

8. **Hydrochloric acid.**—Dilute the strong acid (U. S. P.) with four times its volume of water. Spread the stained place over a bowl of hot water and apply the acid drop by drop until the stain turns bright yellow. Then immerse at once in hot water and rinse thoroughly. Repeat the treatment if necessary. Add a little ammonia solution or borax to the last rinse water to neutralize any acid which may remain in the goods.

9. **Hydrofluoric acid.**—This acid and its salts are excellent agents for this purpose but are so corrosive that they must be employed and handled with a great deal of care. Many of the commercial rust-stain removers contain such substances, and it is often better to purchase them in that form.

LEATHER

The stains caused by the rubbing of leather on textiles probably contain tannin compounds and are difficult to remove. In the case of stains from automobile seats, the varnish is the chief material to be removed (see "Paints," p. 22). The following agents are satisfactory in some cases:

1. **Soap and water.**—If the fabric is washable, use an abundance of soap and rub thoroughly.

2. **Potassium permanganate.**—See page 5.

LIME (SLAKED)

Allow the spots to dry, brush carefully, and treat in the same way as alkali stains (see p. 9).

LINSEED OIL

Organic solvents, such as acetone, carbon tetrachloride, and benzol, are very effective (see p. 3).

MEAT JUICE OR GRAVY

Stains from meat juice are similar to those from blood (see p. 9). Boiling water sets them and should not be used until the protein has been removed by warm water. If grease spots remain, they can be removed by the methods for "Grease and oils," page 15.

MEDICINES

Because of the great number and variety of substances used in medicines, it is not possible to give methods or materials for removing all medicine stains from fabrics. If the nature of the medicine is known, the remover can be chosen accordingly. For instance, a tarry or gummy medicine can be treated with the same agents as tar spots (see p. 27); a medicine containing much iron can be removed by the agents used for iron rust (see p. 19; medicines in a sugar sirup usually can be washed out with water; those dissolved in alcohol sometimes can be removed from fabrics by sponging with alcohol. Many of the medicines used in swabbing sore throats contain silver nitrate and should be treated like the marking inks containing silver nitrate (see p. 17). If the nature of the medicine stain is not known, it is necessary to try various agents until one is found which serves the purpose. Each of the following agents is satisfactory in removing some medicine stains:

1. **Boiling water.**—Pour boiling water on the stain as for fruit stains (see p. 14), or launder washable fabrics.

2. **Acids.**—Dilute solutions of hydrochloric or oxalic acid sometimes are useful for stains containing metallic salts. See "Iron rust," page 19.

3. **Wood or denatured alcohol.**—Some stains can be sponged or soaked out with alcohol.

4. **Javelle water.**—Javelle water (see p. 4) sometimes bleaches a stain that resists other treatment, but should not be used on silk or wool.

METALLIC STAINS

The tarnish of copper, brass, and other metals often stains textile materials. In removing such stains avoid the use of oxidizing agents such as bleaching powder and potassium permanganate. The following is usually effective:

1. **Dilute acids.**—Apply dilute acetic acid, hydrochloric acid, vinegar, or lemon juice. Rinse well as soon as the stain has dissolved (see "Iron rust," p. 19).

MILDEW

Mildew spots are growths of some species of molds on fabrics that have been allowed to remain damp for a time. The spots may be of various colors but often are grayish green, brown, or almost black. The growth of mildew is merely upon the surface of the material at first, but if allowed to continue it attacks and destroys the fiber itself. The spots must be treated when fresh if injury to the fabric is to be avoided. Use one of the following agents:

1. **Soap and water.**—If the fabric is washable, very fresh stains can be washed out with soap and water. Drying in the sun helps to bleach the spots.

2. **Sour milk.**—Soak the stains overnight in sour milk and then place in the sun without rinsing. Repeat the treatment several times if necessary. Slight stains can be removed in this way.

3. **Lemon juice.**—Moisten the stains with lemon juice and salt and allow them to remain in the sun. This often removes slight stains.

4. **Javelle water.**—Old stains may be bleached out with Javelle water (see p. 4), but it should never be used on silk or wool.

5. **Potassium permanganate.**—Old and persistent stains may also be removed with potassium permanganate (see p. 5).

6. **Oxalic acid.**—A 10-per-cent solution of oxalic acid (see p. 5) will remove some forms of mildew.

MILK AND CREAM

Milk stains consist chiefly of protein and fat. For removing these use one of the following:

1. **Cold or lukewarm water.**—If the material is washable, rinsing in cold or lukewarm water followed by hot water and soap is generally sufficient.

2. **Grease solvents.**—Use carbon tetrachloride, acetone, gasoline, or other grease solvent (see "Grease and oils," p. 3). For fabrics which ordinary laundering would injure, first sponge with the solvent, allow the spot to dry, and then sponge carefully with water.

MUD

Allow mud stains to dry and brush carefully before any other treatment is used. Sometimes nothing else is needed. The following agents are satisfactory:

1. **Soap and water.**—If the fabric is washable, use soap and water.

2. **Wood or denatured alcohol.**—Sponge the stains with alcohol (see p. 6).

3. **Water.**—Sponge the stains with water (see p. 6).

4. **Cut raw potato.**—For black silks of firm weave, brush thoroughly and rub the spot with a cut raw potato. This leaves a thin film of starch on the surface of the cloth, which can be brushed off when dry. This treatment is too harsh for any but rather smooth, firm goods and leaves a spot on all but black materials.

MUSTARD

Prepared mustard often contains turmeric (see p. 29) which makes such stains more difficult to remove. The following agents are usually effective for ordinary mustard stains:

1. **Soap and water.**—If the fabric is washable, use soap and water.

2. **Warm glycerin.**

3. **Hydrosulphite.**—See page 5.

PAINTS

OIL PAINTS, VARNISHES, AND ENAMELS

Oil-paint stains generally consist of a finely divided inorganic pigment, held in the fiber by drying oil. Varnish spots contain gums or resins, but usually no pigment. Enamels and some types of wood stains, generally known as varnish stains, contain both a pigment and the gums or resins of varnish. The hardening or drying of both

paint and varnish stains forms a resinous solid which holds the pigment or gum firmly within the fibers and renders the removal of old stains almost impossible. Before using any agent on paint or varnish stains, it is best to scrape off as much of the stain as possible from the surface of the material. If the stain has hardened, apply the solvent on both sides and give time for it to soften. Excessive rubbing roughens the fabric. Methods 1, 2, and 3 are for fresh stains. For those that have hardened but have not oxidized in the fiber, methods 4, 5, and 6 are more suitable.

1. **Soap and water.**—If the material is washable, fresh stains are removed easily by carefully washing with plenty of soap. Older stains sometimes can be removed in this way if they are first softened by rubbing oil, lard, or butter into them thoroughly.

2. **Turpentine.**—Sponge the stains with pure turpentine or wash the whole article in it, if the spots are large or scattered. Rinse several times in fresh quantities of the solvent.

3. **Turpentine and ammonia.**—Stains which are not fresh and yet have not entirely hardened can be softened by moistening them with ammonia solution and sprinkling them with a little turpentine. Roll the article up for 15 to 20 minutes, or soak it for several hours, if necessary, and then wash with warm water and soap.

4. **Oil solvents.**—Carbon tetrachloride, chloroform, or benzol, applied in the same way as turpentine, are satisfactory. Gasoline, kerosene, and alcohol are helpful but usually less effective (see p. 3).

5. **Benzol and acetone.**—Benzol and acetone used in equal parts make a very good paint remover. Equal parts of benzol, acetone, and alcohol also make an excellent solvent. Benzol is a good solvent for the usual type of spar varnish, and wood alcohol will remove stains of shellac varnish.

6. **Sodium carbonate (washing soda).**—Boil the stains in a solution containing 3 tablespoons of washing soda to 1 gallon of water. This is successful for such fabrics as will stand the treatment.

ALCOHOL PAINTS OR STAINS

In paint of this type a pigment is suspended in alcohol with small quantities of shellac and other resinous material. The methods of removing it from fabrics differ somewhat from those for ordinary paint stains. Treatment with turpentine alone or with other oil solvents, which usually will remove ordinary paint stains, is ineffective. Use one of the following agents:

1. **Soap and water.**—If the material is washable, use for very fresh stains. (See method 1 under "Oil paints," etc.)

2. **Wood or denatured alcohol.**—If the stains are fresh, sponge them freely (see p. 6) with alcohol.

3. **Strong ammonia.**—Soak the stain for half an hour in strong ammonia and then wash, or use ammonia and turpentine as suggested in method 3 for "Oil paints," etc.

WATER-COLOR PAINTS

Water-color paints consist essentially of a pigment mixed with some substance which is soluble in water, such as glycerin. These stains are easy to remove from washable fabrics, but from materials like finished silks it is almost impossible to get out all traces. The

appearance of the spots may be improved greatly, however, by method 2, 3, or 4.

1. **Soap and water.**—If the fabric is washable, both fresh and old stains can be removed in this way.

2. **Turpentine and benzol.**—Sponge the stained portion with turpentine until the water color is removed and then with benzol, if necessary, to remove the turpentine.

3. **Gasoline.**—Dip the stained portion in gasoline and rub vigorously (see p. 3).

4. **Glycerin and water.**—Sponge the stain with glycerin until the water color is removed and then with lukewarm water to remove the glycerin. In case a ring is left, treat as described on page 7.

PARAFFIN OR PARAFFIN WAX

The stains from paraffin do not spread like ordinary grease spots, but harden on the cloth, and much of the stain usually may be scraped away. For colored paraffin, see "Candle wax (colored)," page 11. For removing the part of the paraffin stain which has penetrated the fiber, use one of the following agents:

1. **Blotting paper.**—Use blotting paper and a warm iron.

2. **A grease solvent.**—If a trace of the stain remains after treatment by method 1, sponge the stain carefully with a solvent (see "Grease and oils," method 3, p. 15).

PENCIL MARKS

LEAD PENCIL

The marks from lead pencils contain graphite, which is insoluble. The methods of removing pencil marks from textiles are the same as for removing tin-foil marks (see p. 28). A soft eraser sometimes can be used successfully in effacing the marks, especially on stiff or starched materials.

INDELIBLE PENCIL MARKS

Indelible pencil marks also contain graphite, and a dye which usually is not apparent until the marks are moistened. If the stains are known to be indelible pencil marks, do not wet them as this spreads the dye and makes them more difficult to remove. The dye may vary with different makes of pencils, but the following are usually effective:

1. **Organic solvents.**—If the stain has not been moistened it can usually be removed by soaking in denatured or wood alcohol, ether, or acetone (see p. 3). Graphite marks may remain which can be removed by sponging with soap and water.

2. **Javelle water.**—Javelle water (see p. 4) will usually bleach out the dye but can be used only on white cotton or linen.

3. **Potassium permanganate.**—This also is an effective bleach (see p. 5) in removing the dye.

PERSPIRATION

Colors changed by perspiration are very difficult to restore, but treatment may be found satisfactory in some cases (see "Dyes and running colors," p. 13 and "Acids," p. 8). Though the perspiration

of the body is usually acid, old stains may be alkaline due to decomposition. For treating colors changed by this, see "Alkalis," page 9. The yellow stains sometimes produced upon white material by perspiration are removed by the following agents:

1. **Soap and water.**—If the material is washable, exposure to the sun after using soap and water helps to bleach out the stains.

2. **Hydrogen peroxide.**—See page 5.

3. **Javelle water.**—Do not use Javelle water (see p. 4) on wool or silk.

4. **Potassium permanganate.**—See page 5.

POKEBERRY

Besides the red color of the juice, there is present in most pokeberry stains a green color, probably chlorophyll. In removing such stains these two colors must be dealt with. If the fabric is washable, to take out the red color use boiling water as for "Fruits and berries (fresh)" (see p. 14); otherwise sponge with warm water. Use the methods given for "Grass," etc. (p. 15) for removing any green color that remains.

RESINS AND RESINOUS SUBSTANCES

Resinous substances are best removed from textiles by means of organic solvents, the particular solvent most effective depending on the nature of the material which has caused the stain. Use one of the following: Turpentine, benzol, carbon tetrachloride, chloroform, wood or denatured alcohol, ether, kerosene, gasoline. Sponge the stain (see p. 6) with the solvent or dip the spot in it and rub.

SALAD DRESSINGS

Salad dressings usually contain oil, vinegar, or lemon juice, and condiments. They may contain egg or cream also. If egg or cream is present, hot water must not be used. For discoloration owing to the acid of the vinegar or lemon juice, treat in the same way as acid stains (see p. 8). Use one of the following agents for salad-dressing stains:

1. **Soap and water.**—Sponge delicate washable materials with lukewarm water, using soap if the material is not harmed by it.

2. **Grease solvents.**—Apply as suggested on page 15 after sponging the stained place with water and drying it.

SCORCH

Scorch on cotton and linen sometimes can be removed, if the fibers are not actually burned. Wool and silk usually can not be restored to their original condition after being scorched, but wool may be improved by brushing with emery paper. For removing slight scorch stains from cotton and linen, use one of the following:

1. **Soap and water.**—If the fabric is washable, soap and water are sufficient to remove very slight stains.

2. **Water and sunlight.**—Wet the spot with water (or soap and water) and expose to the sun for a day, or longer if necessary. The scorch disappears more rapidly if the material is moistened first.

3. **Hydrogen peroxide.**—Light scorch stains can be removed from any white fabric as follows: Dampen a white cotton cloth with hydrogen peroxide and place over the stain. Place a clean dry cloth

over this to protect the iron and then iron with a medium warm iron, replacing the top cloth if the hydrogen peroxide soaks through. Repeat the operation if necessary. *Precaution:* Do not iron directly on the cloth moistened with peroxide or on the moist fabric after the dry cloth has been removed. If this is done, the iron leaves rust stains on the garment.

SHOE DRESSINGS

BLACK SHOE DRESSINGS

The most common kinds of black shoe polish are the pastes, consisting chiefly of lampblack moistened with turpentine or water, polishing waxes, and sometimes a black dye; and the liquid dressings containing black dye, but generally no lampblack, and a polishing agent such as waxes or shellac. Use one of the following agents in removing stains caused by black shoe polishes:

1. **Soap and water.**—If the material is washable fresh stains made by one of the paste dressings can be removed by sponging or washing thoroughly with an abundance of soap (see p. 6).

2. **Turpentine.**—Use only for the pastes containing turpentine. This may be detected by the odor. Immerse the stained places and rub gently in turpentine.

3. **Potassium permanganate.**—Use potassium permanganate (see p. 5) for stains from the black liquid dressing. First remove as much of the stain as possible by sponging or washing as in method 1.

4. **Javelle water.**—Javelle water (see p. 4) is also useful for stains, from black liquid dressing. Do not use on silk or wool.

TAN SHOE DRESSINGS

The common tan leather dressings consist of either a liquid cleaning solution or a polishing wax, or both. The cleaning solution sometimes contains a considerable quantity of free oxalic acid, which may weaken a fabric seriously if allowed to remain long in contact with it. Sometimes water-soluble dyes are present also, and these make a much more persistent stain on wool than on cotton. The stain produced by the polishing waxes usually may be removed by one of the solvents suggested for "Candle wax (colored)," page 11. Use one of the following agents:

1. **Soap and water.**—Use for stains on cotton and linen.

2. **Wood or denatured alcohol.**—The stains on wool are removed more successfully by sponging (see p. 6) with alcohol, than with soap and water.

WHITE SHOE DRESSINGS

For spots caused by white shoe pastes or liquids use the following:

1. **Water.**—First sponge the spot with water (see p. 6) and when dry brush thoroughly or rub in the direction of the weave with a piece of the same material.

SOAP

When a material has not been rinsed sufficiently and is ironed with soap still present in the fiber, stains sometimes appear which resemble iron-rust stains, but usually are lighter yellow in color. Soap and water is usually sufficient to remove these. Bleaching in the sun helps to remove stains which are especially persistent.

SOOT

Soot spots, being composed of fine particles of carbon, are insoluble and must be removed mechanically from a fabric. Use one of the following agents:

1. **Absorbents.**—First brush the stain, then place on it such absorbent powders as fuller's earth, French chalk, cornstarch, corn meal, or salt. Work them around until they become soiled and brush them away. If the fabric is washable, then sponge or wash the stain with soap and water.

2. **Organic solvents.**—Chloroform, gasoline, or other organic solvents (see p. 3) may be used to rinse the soot from materials injured by washing. First brush the stain lightly or treat it with absorbent powder, as in method 1, then immerse it in the solvent and rub gently, or brush with a small, soft brush. For the treatment of rings, see page 7.

STOVE POLISH

Stove polish usually contains carbon in the form of graphite. It is difficult to remove such stains completely. The following agents are fairly satisfactory:

1. **Soap and water.**—If the fabric is washable, this method is fairly successful, especially if the soap is rubbed thoroughly on the stain.

2. **Organic solvents.**—Chloroform, gasoline, or other organic solvents (see p. 3) may be used for material injured by washing. Treat with absorbent powders as for "Soot," method 1, and then immerse the stain in the solvent. While immersed rub it gently or brush it with a small soft brush.

SUGAR SIRUPS

If the material is washable, sugar-sirup stains can be easily rinsed out with soap and water. For more delicate fabrics sponging (see p. 6) with clean water is generally effective.

TAR, ROAD OIL, CREOSOTE OIL, ASPHALT, ASPHALT PAINT, AXLE GREASE

The stains from these substances are grouped together because they are somewhat similar in their chemical composition and certain solvents may be used for all. The stains are rather difficult to remove, especially from cotton. After the oily or tarry part has been taken out, dark-colored organic or mineral impurities are likely to remain. Use one of the following agents:

1. **Carbon tetrachloride.**—Sponge the stains with carbon tetrachloride or immerse them in the liquid and rub. The latter treatment is best if the fabric is not too delicate. Follow by a thorough washing in soap and water if the fabric is washable. For stains on carpet, scrub with a cloth soaked in the solvent, changing to a fresh cloth as soon as it becomes discolored, and continuing as long as any color comes off.

2. **Carbon disulphide.**—*Caution.* This is the best general solvent for these substances but is very inflammable and poisonous. If used, it should be kept far away from any flame and the garment cleaned in a very well-ventilated place. It is better not to store the unused portions of the liquid.

3. **Benzol, chloroform, or turpentine.**—These may be applied in the same way as carbon tetrachloride, method 1.

4. **Lard.**—Rub thoroughly into the stain, then wash in hot water and soap. Repeat the treatment, if necessary.

TEA

Tea stains contain a brown coloring matter which is not difficult to remove when fresh, but which becomes very persistent when allowed to remain a long time in contact with the fiber. Stains from tea containing milk or cream are removed more easily from cottons and linens than are stains made by clear tea. Use one of the following:

1. **Borax and boiling water.**—If stains are on cotton or linen and only a few days old, soak them in a borax solution (one-half to 1 teaspoon of borax to 1 cup of water) and then rinse in boiling water.

2. **A strong soap solution.**—Use a half-inch cube of soap to each cup of water, and boil the stained material in this. Stains 2 or 3 weeks old can be removed if they are on small articles of white washable material which can be boiled in a small quantity of liquid.

3. **Potassium permanganate.**—Use potassium permanganate (see p. 5) for stains which resist other reagents.

4. **Javelle water.**—For persistent stains, Javelle water (see p. 4) is slightly less satisfactory than the potassium permanganate and can not be used on wool or silk.

5. **Lemon juice and sunlight.**—Keep the stains moist with lemon juice and expose them to the sun for a day or two. They will be practically removed.

TIN FOIL

The stains caused by the rubbing of tin foil, as for example when it is used to wrap stems of cut flowers, consist of finely divided particles of metal. Since these are not soluble in any chemical that would be harmless to textile fibers, they must be removed from the fabric mechanically. Use one of the following agents:

1. **Soap and water.**—If the material is washable, use the soap freely and rub the stain thoroughly. Sponge woolen materials.

2. **Chloroform or other organic solvent.**—Immerse the stained place in a small vessel of the solvent (see p. 3) and brush gently with a small soft brush or rub with a cloth.

TOBACCO

Stains from tobacco juice consist of the brown coloring matter of the tobacco plant and may contain, in addition, molasses which has been added to the tobacco for sweetening and flavoring. Treat stains from the tarry substances in the stem of a pipe in the same way as "Tar," etc., page 27. Use one of the following reagents in removing tobacco-juice stains:

1. **Soap and water.**—Sponge materials that can not be washed (see p. 6). If a stain on washable materials can not be completely removed by washing, bleach it in the sun. Moistening it with lemon juice makes it disappear more quickly.

2. **Wood or denatured alcohol.**—Traces of color remaining on wool fabrics after sponging with water can be removed sometimes by sponging with alcohol.

3. **Potassium permanganate.**—Use potassium permanganate (see p. 5) for stains that washing will not remove.

4. **Javelle water.**—Do not use Javelle water (see p. 4) on wool or silk.

TOMATO VINE

The stains from tomato vines contain, besides the green coloring matter (chlorophyll), a brown color which is rather persistent. Use one of the following agents:

1. **Lemon juice and sunlight.**—First wash the stains carefully, then moisten them with lemon juice and expose them to the sun for several days if necessary. This is satisfactory for stains on white washable materials.

2. **Wood or denatured alcohol.**—Sponge the stains (see p. 6) with alcohol which removes the green part of the stain. If the brown stains persist, use one of the bleaches suggested in method 3 or 4. Stains on wool or silk are practically removed by this treatment.

3. **Potassium permanganate.**—First wash the stains with soap and water or sponge with wood or denatured alcohol; then apply the potassium permanganate (see p. 5).

4. **Javelle water.**—First wash the stains with soap and water or sponge with wood or denatured alcohol; then apply the Javelle water (see p. 4). Do not use it on silk or wool.

TURMERIC

Turmeric, because of its yellow color and aromatic flavor, is used in curry powder, and oftentimes in pickles and prepared mustard. The yellow coloring matter has a special attraction for cotton. Methods 1 and 2 are for fresh stains, and methods 3, 4, and 5 for old stains.

1. **Dilute ammonia solution.**—Remove fresh stains on white materials by soaking in this reagent.

2. **Wood alcohol or chloroform.**—Soak the material in wood alcohol or chloroform.

3. **Hydrosulphites.**—See page 5.

4. **Javelle water.**—Do not use Javelle water (see p. 4) on silk or wool.

5. **Potassium permanganate.**—See page 5.

URINE

These stains are so variable in composition that it is impossible to give methods which will be successful in all cases. If the color is not destroyed but only changed, one of the methods given for acids or alkalis (see pp. 8 and 9) may be used successfully. Normal human urine is usually acid and that of herbivorous animals is alkaline.

1. **Salt and water.**—A warm solution of salt is sometimes effective and often will not destroy the color of the fabric.

2. **Hydrogen peroxide.**—Add hydrogen peroxide (see p. 5) to the salt solution. A little sodium perborate may be used instead of the hydrogen peroxide.

VASELINE

Stains from vaseline are usually merely greasy in nature and can be removed readily with one of the following solvents:

1. **Turpentine.**—Sponge fresh stains with this agent (see p. 6). Old stains, even those which have been washed and ironed, usually can be removed by soaking in turpentine.

2. **Absorbents and solvents.**—See "Grease and oils," methods 2 and 3, page 16.

WALNUT (BLACK)

The persistence of stains from the husks of black walnuts is probably due to their content of tannin, which most fibers absorb or combine with very readily. It is possible that the tannin acts as a fixing agent, holding the coloring matter of the husks firmly to the fiber. Fresh stains, which are still moist, usually can be removed, provided the material is strong enough to stand the treatment, but old stains or stains on delicate fabrics in many cases can not be removed. The following reagents are satisfactory in some cases:

1. **Concentrated soap solution.**—Use a half-inch cube of laundry soap to a cup of water, and boil the stained material in this solution. The treatment is successful only with fresh stains on cotton or linen. In the case of week-old stains, a gray color persists which can sometimes be removed by Javelle water (see method 2).

2. **Javelle water.**—Dilute the Javelle water (see p. 4) with an equal volume of hot water. Soak the stained place for one and one-half hours in this solution, then rinse thoroughly, treat with dilute oxalic acid, and rinse again. This is effective in removing a week-old stain and the fibers of the material are not seriously injured. Soaking the stain in Javelle water of full strength, however, rots the material. Do not use Javelle water on silk or wool.

WATER SPOTS

Some silks and wool are spotted by water (see p. 7). This probably dissolves a part of the finishing or weighting substances, and, when the water evaporates, they are deposited irregularly or in rings. A satisfactory method for removing such spots is to dampen the entire material evenly and press it while still damp. This may be done either by sponging the material carefully with clean water or by shaking it in the steam from a briskly boiling teakettle until it is thoroughly damp. Another method is to dip the garment in an organic solvent (see p. 3). Scratching with the finger nail or a stiff brush is sometimes sufficient.

WHITE SAUCES, CREAM SOUPS, GRUEL

These usually consist chiefly of milk and butter, thickened with flour. Flavorings, vegetables, and other added materials do not as a rule effect the character of the stain. The starch and gluten of the flour make it particularly hard to remove such stains from materials that can not be washed. Use one of the following agents for treating these stains:

1. **Soap and water.**—If the material is washable, soap and water is generally sufficient.

2. **Hot water.**—Sponge the stains with hot water (see p. 6). Follow this by a grease solvent when necessary (see p. 15).

ADDITIONAL COPIES
OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT
5 CENTS PER COPY

Ag 84F
Reserve

LIBRARY
RECEIVED
OCT 6 - 1942
U.S. Department of Agriculture

Stain Removal FROM FABRICS

home methods

FARMERS' BULLETIN
NO. 1474 [Rev.] 1942
U.S. DEPARTMENT OF AGRICULTURE

To Remove Stains Successfully

TREAT THE STAIN while it is fresh.

KNOW YOUR CLOTH—What is it made of? Does it wash well?

WORK CAREFULLY but quickly.

TRY SIMPLE METHODS FIRST.
For a nongreasy stain, sponge with cold water.
For a greasy stain, try carbon tetrachloride.

AVOID HOT WATER on an unknown stain. Hot water sets many stains.

TEST FOR COLOR CHANGE on a sample of the cloth before using any stain remover.

USE REMOVERS SPARINGLY. Many brief applications are better than one long one.

USE LIGHT, BRUSHING MOTIONS—never rub a remover into the stain.

NEUTRALIZE acids with alkalies; alkalies with acids.

RINSE WELL—never let a chemical dry on the cloth.

SPREAD a liquid remover unevenly into the cloth around the stain.

DRY RAPIDLY to help prevent rings.

The demands of war are causing shortages of many chemicals. From time to time, you may find it difficult to get even the small supplies needed for removing stains at home. Wherever possible several methods are suggested for taking out each stain—some of the old-time ways along with the modern chemicals. Don't be discouraged if you can't get the stain remover you like best. We need to salvage every scrap of cloth in wartime.

STAIN REMOVAL FROM FABRICS

HOME METHODS

by

MARGARET S. FURRY, Assistant Textile Chemist

OFF with stains! Keep clothes and home fabrics spotlessly clean. It is smart, thrifty, and really patriotic these war days to take best of care of your clothing and household fabrics so that they will look well and last as long as possible.

Many stained and spotted articles are needlessly thrown away each year. Many others are needlessly ruined by unsuccessful attempts to remove stains. It is possible to remove practically any stain at home by following a few simple rules. To take proper care of your fabrics, you will find it worthwhile to learn enough of the "know-how" skill so that you can do a good job.

One of the most important rules is to remove the stain promptly. Stains that become old usually require a remover so strong that it sometimes injures the cloth.

Another important rule is to select a remover that will not harm the cloth. If you can find out what caused the stain, this also will guide you in choosing the remover best suited for the job.

Work carefully, patiently, quickly. Often the way in which cleaning is done is as important as the kind of cleaning materials used, in getting good final results.

The following pages not only tell how to remove many kinds of stains but describe as well the general principles of stain removal.

Steps to Success in Stain Removal

Treat Stains Promptly

First rule for success in removing a stain is to start while it is fresh, even before it dries if possible. Hot soapsuds or the heat of an iron sets some stains too, so that it takes strong treatment to loosen them. The professional cleaner always "spots-out" stains before he gives a garment a general cleaning or pressing.

Suit the Remover to the Cloth

Before starting to treat a stain, be sure you know what the cloth is made of—whether cotton, wool, silk, rayon, or a mixture. A stain remover successful on one kind of cloth may ruin another. Naturally, you want the method that will do the least possible damage to the cloth.

Strong acid removers destroy cotton and linen cloth; even mild acids, such as lemon juice and vinegar, may injure cotton and linen if allowed to remain too long on the cloth. If you use a mild acid to remove a stain, apply a weak alkali such as ammonia water or washing or baking soda immediately to stop the action of the acid. Wash the material in water after the treatment. (See p. 10.) Strong alkalies harm these materials also, but weak alkalies are safe to use if you rinse the article well in water afterwards.

Cotton and linen

All bleaches will rot cotton and linen if allowed to remain on the stain for more than a minute or two and will remove the color, too. Sodium perborate and hydrogen peroxide are the safest bleaches to use.

Strong acids and alkalies destroy wool or silk materials. Mild acids, except nitric, which weakens the material and turns it yellow, are safe to use. Even mild alkalies such as weak solutions of ammonia water, borax, or washing soda, must be used with care on wool. Bleaches that contain chlorine, such as ordinary bleaching powder, also destroy wool and silk. Sodium perborate is a good bleach to use, particularly on wool. Use lukewarm water—hot water turns both wool and silk yellow, shrinks wool, and injures the finish of silk.

Wool and silk

Here are a few safety rules to follow in removing stains from rayon material. Never use strong acids or alkalies; they injure the material. Mild acids or alkalies usually do not harm it if properly rinsed. Water weakens rayon; do not pull or twist it when it is wet. Sodium perborate and hydrogen peroxide are the safest bleaches to use, but mild chlorine ones can be used with success.

Rayon and synthetics

Three kinds of rayon are made in this country—viscose, cuprammonium, and acetate. In removing stains from viscose and cuprammonium rayon, treat the material like cotton or linen. But acetate rayon is different. It dissolves in acetone, alcohol, or chloroform, so test a sample of any rayon material before using these liquids to remove a stain. Mixtures of alcohol and ether, or alcohol and benzene also are unsafe to use on acetate rayon or on colored material. Always mix alcohol with 2 or 3 parts of water before using it. Pressing with a hot iron may melt acetate rayon.

Synthetic materials, such as nylon and vinyon, are not harmed by either acids or alkalies. Water does not weaken them, as it does the rayon. They take up very little moisture, and as a result, stains such as coffee, tea, and fruit juice, remain on the surface and wash off easily. You may use bleaches safely on nylon or vinyon. But vinyon, like acetate rayon, dissolves in acetone and

chloroform, so test a sample of the material before using either of these to remove a stain. Press nylon with a warm (not hot) iron.

Other synthetic materials are made from peanut, corn, soybean, milk casein, and fish protein, but as yet they are not common and are not generally recognized. Treat them as you would silk and wool in removing stains.

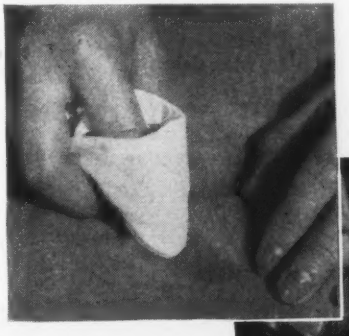
Suit the Remover to the Stain

Find out what the stain is, if possible, before trying to remove it. The wrong treatment may set a stain so that it is impossible to take it out. Always test water or any chemical stain remover on a sample of the cloth or on a hidden part of the garment (seam or hem) to be sure it will not change the color. You may have to choose between the stain and a faded spot.

If the stain is not greasy, first try to remove it with cold water. Hot water sets many stains and makes them harder to remove. Always test a sample of the cloth to see if water spots it. If not, place a pad of clean cloth underneath the stain, with the stain face down. To sponge, use a soft cloth, dampen it with cold water, and cover with a layer of dry cloth so that it is not too moist. Then sponge the stain with light, brushing motions, working from outside of stain to the center. Spread the moisture into the cloth around stain to keep a ring from forming.

Water

The trick is to spread, or "feather-out," the liquid around the stain until there is no definite edge when the material dries. It may help to go over the spot with a cloth wet with alcohol mixed with 2 parts water. As alcohol changes some colors and dissolves acetate rayon, use it sparingly. Finally pat the spot with a dry cloth. Dry rapidly to prevent water rings.



Left.—Sponge a nongreasy stain with water. Work from the outside of the stain to the center. Spread moisture unevenly into the cloth around the stain.

Right.—To remove a water ring, rub the cloth between the hands; then scratch with the fingernail.

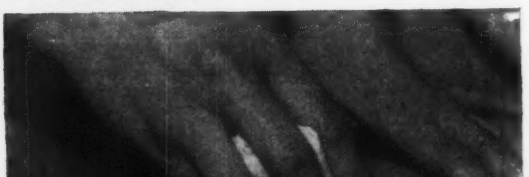
If a ring has formed, remove it either by sponging the material with clean water or by shaking it in the steam from a briskly boiling teakettle. Scratching with the fingernail or a stiff brush or rubbing the cloth between the hands will sometimes remove a ring.

If a stain seems to be greasy, try a grease solvent, such as carbon tetrachloride, Stoddard solvent, gasoline, benzene, turpentine, ether, acetone, or alcohol. Most of these do not change the color of fabrics, but ether, acetone, and alcohol are apt to. So use them carefully on colored materials; always mix alcohol with 2 parts water. Either sponge the stain with the solvent or dip into a bowl of the liquid.

Other solvents

To sponge a grease spot, lay the stained material, wrong side up, on a pad of soft cloth. Apply the remover to the back of the cloth, so that the stain is washed from the material without having to pass through it. Sponge with a clean, soft, lintless cloth. Dip the cloth in the liquid and wring out most of the moisture. Sponge with light, brushing motions, working from the outside of the spot to the center. Work rapidly and use the solvent sparingly. It is better to apply the solvent several times quickly than to apply it once and leave it on for a long time.

Left.—Sponge a greasy stain with carbon tetrachloride, gasoline, or benzene. Lay the stain face down on a pad of cloth.



Right.—Use light brushing motions, working from the outside of spot to the center. Change the pad as it becomes soiled.

Sprinkle talcum, cornstarch, or chalk on a fresh grease or oil stain. Rub it in well, and let stand until it absorbs the grease; then brush off.

Avoid rings by spreading the cleaning fluid into the area around the stain and at the same time blowing lightly on the spot to dry it quickly. Do not rub—rubbing may cause light and worn-looking spots that are as bad as the stain. Change the pad as it becomes soiled. Finally pat the material with a dry cloth.

Always use these solvents out of doors or in a well-ventilated room, as it is harmful to breathe the vapors. Gasoline, naphtha, and ether catch fire easily and often explode, so never use them near a fire. Sometimes just rubbing a garment that is soaked with gasoline will cause it to burst into flames. Benzene, turpentine, alcohol, and acetone also are inflammable. For this reason, cleaning with large amounts of these fluids at home is not recommended. Grease-spot removers made entirely or in large part of carbon tetrachloride will not catch on fire.

Absorbent powders

Absorbent powders—chalk, talcum, corn meal, cornstarch—work well on light, freshly made stains such as grease spots or splatters of salad oil. Also such powders brush off readily and are safe to use on all materials. This method is not always successful, however, if the stain is very large or has become set or dry. To remove a stain with an absorbent powder, lay the stained article on a table and sprinkle a layer of the powder over the stain. Spread the powder around, and when it becomes gummy, shake or brush it off. Repeat this several times or until the stain disappears. If after several treatments the stain still shows, place the stain between clean blotting papers and apply a warm (not hot) iron for several minutes. Stains made by solid fats, such as butter, must be melted before the blotters can absorb them.

Use Javelle water to bleach stains from uncolored cotton or linen. Apply with a medicine dropper; rinse quickly in water. Apply a few drops of "hypo," vinegar, or oxalic acid to stop the action of the chlorine.

Use bleaching chemicals carefully because most bleaches remove the color as well as the stain, besides weakening the cloth. Colored material in particular must be treated rapidly and rinsed well in water afterwards.

Bleaches **Javelle water** and other chlorine bleaches (sodium hypochlorite solutions) remove certain stains from uncolored cotton, linen, or rayon cloth. Do not use them on colored materials or on silk or wool.

To prepare Javelle water: Mix ½ pound washing soda in 1 quart of cold water. Add ¼ pound of bleaching powder (commonly called chloride of lime). Strain this liquid through a piece of muslin and store in a bottle with a tight cork or stopper ready for use.

To remove a stain with Javelle water, stretch the stained part of the cloth over a bowl filled with cold water and drop the Javelle water on the stain with a medicine dropper. (If the stain is large, dip the entire garment in the Javelle water). Never let the Javelle water remain on the stain for more than 1 minute;

it rots even linen and cotton materials if allowed to remain on them longer. Rinse quickly by dipping in the water.

Next apply a few drops of a solution made up of ½ teaspoon of sodium thiosulfate and 1 to 2 teaspoons of vinegar in 1 pint of water. This stops the action of the chlorine remaining in the cloth after the treatment with Javelle water. Then rinse the cloth well in clean water. You may use vinegar alone or oxalic acid solution (1 teaspoon oxalic acid to 1 pint water) instead of the thiosulfate solution, but they are not so satisfactory. To remove the stain completely you may have to repeat the Javelle water-thiosulfate treatment several times.

Sodium perborate is one of the safest bleaches for all types of materials The treatment must be rapid and the sodium perborate well rinsed from the material, however, or it will take out the color. It will not remove some ink stains, iron rust, dyes and running color, or metal stains.

For small, fresh stains, sponge with a liquid made up of 4 tablespoons sodium perborate to 1 pint lukewarm water. Or stretch the stained cloth over a bowl of hot water, dampen the stain with water, and dust the powdered sodium perborate on it. Let stand a minute or two; then sponge or rinse well with water.

For a large stain, soak the entire garment for a half hour or longer in sodium perborate and soapsuds (4 tablespoons perborate to a pint of soapy water). To remove grass, beverage, mud, scorch, and some perfume stains, mix 1 level teaspoon sodium perborate with 1 pint hydrogen peroxide. But use this mixture immediately, as it soon loses its strength. Rinse in water.

Sodium perborate is particularly good to use on white woolens; it leaves them soft and fluffy.

Hydrogen peroxide, obtained at drug stores, is a good bleach for light scorch stains. The action of hydrogen peroxide is quicker if a few drops of ammonia water are added just before use. Or you can add 1 level teaspoon of either borax or sodium perborate to 1 pint of peroxide. Apply it to the stain with a medicine dropper, a glass rod, or sponge the stain with it. Follow by careful sponging or rinsing with water.

Oxalic acid is poisonous and should be handled carefully. Label it **"Poison"** and **keep it out of the reach of children.** Prepare a solution as follows: Dissolve about 3 tablespoons of the crystals of the acid in a pint of lukewarm water. Put in a bottle, stopper tightly, and use as needed. Stretch the stained cloth over a bowl of clean water and apply the oxalic acid to the stain with a medicine dropper or glass rod. Allow it to remain for a few minutes; then rinse quickly by dipping in the water. Apply a weak solution of ammonia water, borax, or sodium perborate to neutralize the action of the acid and rinse again. Never use oxalic acid on weighted silk.

Hydrosulfites are very useful to remove dye stains, iron rust, ink, mildew, grass, and fruit stains. Sodium hydrosulfite, the one most often used, may be bought at drug stores under many trade names as a dye or color remover for preparing cloth for redyeing. It should be stored in a tightly closed can so it will not become damp. To use, dissolve 2 teaspoons of the sodium hydrosulfite

in 1 pint of warm water and either sponge or dip the stained article in it. Or sponge the stain with water first, sprinkle the powder on the stain, and work it in well with the fingers. Rinse quickly. If used on colored material, hydrosulfites are apt to remove the color; so apply the treatment quickly and rinse well in water afterwards. Do not use on weighted silks.

Pepsin and other enzymes

Enzymes will remove certain stains from all kinds of materials. You can buy pepsin, the best known of the enzymes, at the drug store. It softens stains containing albumin (found in blood, gelatin, glues, certain medicines, eggs, milk, and ice cream), so that they wash out in water easily. Pepsin will soften these stains, even after they have been set by heat or alcohol. First be sure there is no soap or other alkali on the stain, or the enzyme will not react. Then dampen the stain with lukewarm water and sprinkle with pepsin powder. Let it stand for half an hour, keeping the spot damp. Or mix the pepsin with water (2 teaspoons to 1 pint lukewarm water) and sponge the stain with it. Sponge or rinse well with water.

Soaps and soaplike washing agents

Soaps and other soaplike cleaners are helpful in removing grease and food spots, blood, and many other stains. Select a mild soap for washing silks and woolens because an alkaline soap may cause the colors to run and the cloth to become stiff and harsh. Also use a mild soap on all other delicate materials and on cotton, especially on those that are not guaranteed colorfast. If you are washing in hard water, add a water softener or one of the special phosphates—sodium hexametaphosphate or pyrophosphate (sold under brand names)—which prevent the formation of hard-water scum. This scum is caused by the reaction of the soap and the calcium and magnesium compounds in the water. It settles on the clothes in gray or brown specks that are hard to remove.

Synthetic soaplike cleansing or washing agents are now on the market. These are commonly called soapless oils, shampoos, or lathers and may be obtained in powder, chip, or liquid form. They are intended especially for shampooing hair or for washing upholstery, blankets, and sweaters.

These soaplike washing agents have several advantages over soaps. They are mild (not alkaline) and so are excellent for washing silks and woolens and all delicate materials. With them there is less danger of colors running or of materials shrinking or becoming harsh. They suds and lather well and do not form a scum when used with hard water.

There are also special dry-cleaning soaps or benzene soaps, which, added to dry-cleaning fluid, aid in softening the stain and removing the dirt. Or, to soften a heavy grease or wax stain, put these soaps directly on the stain, especially on silk and wool cloth. Then rinse well in carbon tetrachloride, Stoddard solvent, gasoline, or benzene.

Stain-Removal Supplies

Keep all stain removers together on a handy shelf, but out of the reach of children. Label all the jars and bottles; be sure to mark *"Poison"* plainly on the poisonous ones. To have a complete shelf, you will need to keep at least three kinds of cleaning agents—bleaches, absorbent powders, grease solvents.

Absorbent powders—for grease spots or ink stains.
Chalk, corn meal, talcum powder, or cornstarch.

Acetic acid—10-percent solution. (Vinegar is about 5 percent acetic acid and can be used to remove alkalis, to stop the action of Javelle water, and to restore some colors.)

Ammonia water—10-percent solution.

Bleaches

JAVELLE WATER—for white cotton, linen, or rayon only.
SODIUM PERBORATE—for any material, particularly good on white woolens.
HYDROGEN PEROXIDE—a mild bleach for any material.
OXALIC ACID—never use on weighted silk. Label **"Poison"**.
HYDROSULFITES—never use on weighted silks.

Pepsin—stain softener available at drug stores.

Sodium thiosulfate, or photographer's "hypo"—removes iodine stain; use with Javelle water to remove chlorine from cloth.

Solvents

TURPENTINE—for paint stains.
DENATURED ALCOHOL—be sure to mix alcohol with 2 parts water when using on acetate rayon or colored material.
CARBON TETRACHLORIDE, GASOLINE, OR BENZENE—for grease and oil stains.
ACETONE OR FINGERNAIL-POLISH REMOVER—for fingernail-polish stains. Never use on acetate rayon or vinyon.
GLYCERINE—for tannin stains; also to loosen or soften other stains.

Washing agents

SOAP.
SOAPLESS SHAMPOOS, OIL, OR LATHER—powder or liquid.
DRY-CLEANING SOAP—to use with dry-cleaning fluid.
WASHING SODA.

Equipment

Cloth, white blotting paper, or cleansing tissues; medicine dropper; glass rod; bowls.

Removing Individual Stains

Acids

Act quickly when an acid has been spilled, for it may damage the cloth or destroy the color. First, wash the stain with cold water to stop the action of the acid. Rinse several times in cold water; then apply ammonia water baking soda. Water alone will not restore color, but ammonia water may.

Baking soda.—Sprinkle soda on both sides of the stain, moisten with water, and allow to stand until the bubbling stops. Rinse well with water.

Ammonia water.—Hold the dampened stain over an open bottle of strong ammonia water; or if the material doesn't water-spot, put a few drops of ammonia water, diluted to half strength on the stain. Since ammonia water affects some dyes, have white vinegar ready to apply quickly if the color changes. Rinse well with water.

Adhesive Tape

Sponge or soak the stain in carbon tetrachloride, benzene, or kerosene. Kerosene will make the cloth oily, so wash in warm suds after the treatment.

Alcoholic Beverages and Soft Drinks

Alcoholic beverages and soft drinks may cause tannin stains. Fresh tannin stains are almost colorless, but if they are allowed to stand or are washed in soap and water or heated as in ironing and pressing, they turn brown and are almost impossible to remove. Fresh stains can be removed as follows:

Cold water and glycerine.—Sponge the stain with water or with a mixture of equal parts alcohol and water. Then pour glycerine on the stain and rub between the hands. Let stand for a half hour and rinse with water.

Acetic acid.—If the above treatment does not remove the stain, apply a 10-percent solution of acetic acid with a medicine dropper and let stand a few seconds. Rinse and repeat if necessary. Stop the action of the acid with baking soda or ammonia (see above) and spread the garment in the sun.

Bleaches.—The last traces of stains on white materials can sometimes be removed by bleaching. Use one of the following:

Hydrogen peroxide or sodium perborate.—Sponge lightly with hydrogen peroxide or with a mixture of 1 level teaspoon sodium perborate to 1 pint hydrogen peroxide. If this does not remove stain, cover dampened spot with powdered sodium perborate and let stand an hour. Rinse in water.

Javelle water.—For stains on uncolored cotton or linen material, dip in Javelle water for 1 minute (no longer), remove the chlorine from the cloth with a sodium thiosulfate solution, rinse well in water. (See p. 6 for more detailed instructions.) Do not use Javelle water to remove stains from colored materials or from silk or wool.

Alkalies

Remove alkali spots at once; they may destroy not only the color but the material as well. First sponge or rinse the spot thoroughly with cold water. This generally is sufficient for mild alkalies such as washing soda and weak ammonia water. But to be on the safe side and to help restore color, apply an acid—this stops the action of the alkali. Then rinse or sponge the spot thoroughly with water. Use any of the following mild acids:

Lemon juice.—Squeeze the juice on the stain, and allow it to remain until the juice loses its bright yellow color. Sponge or rinse well with water.

Vinegar.—Sponge with vinegar; then rinse in cold water.

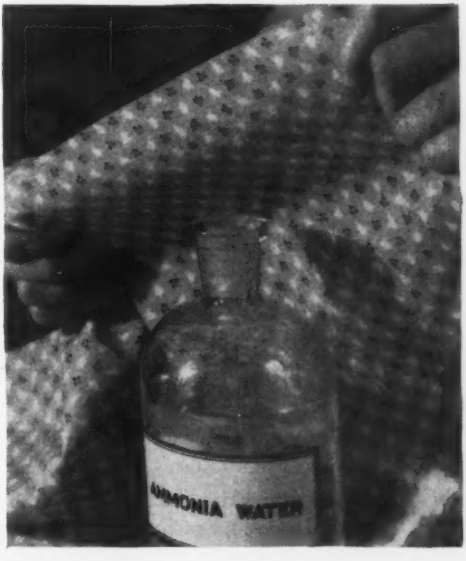
Acetic acid.—Apply a few drops of a 10-percent solution of acetic acid with a medicine dropper or a glass rod and remove the excess by rinsing or sponging with water.

Argyrol

Argyrol stains must be treated while still fresh. Proceed as follows:

Pepsin.—Sponge with warm water to remove any argyrol that has not soaked into the cloth. Then sprinkle powdered pepsin over the dampened stain. Work it well into the cloth, let stand a half hour or longer, then sponge with water.

Iodine and sodium thiosulfate ("hypo").—After the above treatment, put a few drops of tincture of iodine on the dampened stain with a glass rod. Let stand for 10 or 15 minutes; then sponge with a solution prepared by dissolving several crystals of sodium thiosulfate in ½ cup of water. Rinse well in water.



To bring back the color changed by an acid, hold the dampened stain in the fumes from an open bottle of ammonia water.

Blood

Blood stains will usually come out if sponged or washed in cold or lukewarm water first. Never use hot water; it sets the stain.

Cold or lukewarm water.—For stains on silk or wool, sponge with cold or lukewarm water. For washable material, soak the stains in cold water until they turn light brown in color; then wash in warm soapy water. If the stain is an old one and has dried, it may help to add 2 tablespoons of ammonia water to each gallon of water used for soaking. Strong salt water (about 2 cups of salt to 1 gallon water) is also good to loosen the stain.

Hydrogen peroxide and sodium perborate.—If the above treatment does not completely remove the stain, sponge with hydrogen peroxide. Or sponge with a mixture of 1 level teaspoon sodium perborate to 1 pint hydrogen peroxide. If the stain still shows, cover the dampened spot with powdered sodium perborate and let stand an hour. Rinse thoroughly. These bleaches will not harm the cloth, but before using test for colorfastness on a sample of cloth or on an inner seam of the garment. If the color fades, do not use the bleaches; just dampen the stain and spread in the sun to bleach.

Starch.—Use a starch paste to remove stains on thick materials, such as flannel and blankets, which cannot be soaked in water. Mix raw starch to a paste with cold water, apply the paste thickly to the stain, and brush it away when it dries. Repeat the treatment until the stain disappears.

Bluing

Soak fresh stains or rinse them in cold water. Or wash the stained article with plenty of warm soapy water, rubbing thoroughly.

Candle Wax, Colored

Scrape away as much wax as possible with a dull knife. Then treat as follows:

Blotting paper.—Place the stain between clean white blotters, cleansing tissues, or paper towels, and press with a warm iron, changing the blotters as they become soiled. Then sponge with carbon tetrachloride or other grease solvent.

Denatured alcohol.—If a color stain remains, sponge with liquid made up of 1 cup denatured alcohol and 2 cups water.

Candy

Launder in warm soapy water if the material is washable. Otherwise, sponge with clear warm water.

If dye or chocolate stains remain, follow instructions given under Dyes and Running Colors, page 14, or Chocolate and Cocoa, page 13.

Carbon Paper

Carbon-paper stains usually can be removed by washing in a heavy suds of soap and water. Sponge unwashable materials with a liquid of 1 cup alcohol and 2 cups water; then sponge with cold water.

Chewing Gum

Use one of the following methods:

Ice.—If the material will not water-spot, rub the gum stain with ice. Then scrape and rub the hardened gum out of the cloth. This method is particularly good for rugs and other heavy materials.

Egg white.—If the material is washable, soften the gum stain with egg white and then wash.

Carbon tetrachloride, kerosene, or turpentine.—Soak the stain in carbon tetrachloride, kerosene, or turpentine. If kerosene is used, wash in warm soapy water afterwards.

Chocolate and Cocoa

It may be necessary to try more than one method to remove chocolate and cocoa stains, since they usually contain other substances such as fat, milk, starch, and sugar. First scrape off as much of the stain as possible with a dull knife; then try one of the following:

Soap and warm water.—If the material is washable the regular laundering in warm soapy water will often remove this stain.

Hydrogen peroxide and sodium perborate.—Sponge stubborn stains with hydrogen peroxide. Or use a mixture of 1 level teaspoon sodium perborate to 1 pint hydrogen peroxide. If the stain still shows, cover the dampened spot with powdered sodium perborate and let stand an hour. Rinse thoroughly. Be sure to test for color change on a sample of the cloth or on the inside of hem or seam of the garment before using these bleaches on the stain.

Carbon tetrachloride and pepsin.—If the cloth is not washable sponge with carbon tetrachloride to dissolve the grease. Dry thoroughly, then sponge with warm water, and dust with pepsin powder. Work the powder into the cloth, let stand for 30 minutes or longer, then sponge with water.

Cod-liver Oil

Fresh cod-liver oil stains are almost colorless and are easy to remove. But old stains, especially if the material has been washed or ironed, are a light brown and are almost impossible to remove, even with bleaches. Treat fresh stains with either of the following:

Grease solvents.—Sponge or dip fresh cod-liver oil stains in carbon tetrachloride, benzene, Stoddard solvent, or gasoline. When the cod-liver oil has been removed, sponge with warm soapy water.

Glycerine.—For washable materials, pour either glycerine or one of the soapless shampoos on the fresh stain. Rub lightly between the hands to loosen the stain, rinse well in water, and then wash in warm soapsuds.

Coffee and Tea

Water and glycerine.—If the stains are on wool or silk, sponge with lukewarm water. Then apply glycerine and rub lightly between the hands. Let stand for half an hour and rinse thoroughly with water. If a grease spot from cream remains, sponge with carbon tetrachloride.

Boiling water.—Remove fresh stains from washable materials by pouring boiling water on the stain from a height of 2 or 3 feet, then wash in warm soapy water. If a trace of stain remains, dry in the sun or bleach with hydrogen peroxide and sodium perborate.

Hydrogen peroxide and sodium perborate.—Sponge with clear water and then with a solution of 1 teaspoon sodium perborate to 1 pint hydrogen peroxide. If the stain still shows, sprinkle powdered sodium perborate on the stain and let stand half an hour. Rinse well with water.

Dyes and Running Colors

As there are many different kinds of dyes, no one remover will successfully take out all dye stains. In fact, it may be impossible to remove some of these stains completely. Proceed as follows:

Water and sunlight.—If the material is washable, rinse the stains in cold or lukewarm water (soak for 10 to 12 hours if necessary), wash in heavy soapsuds, and then dry in the sun. Spots on wool or silk materials sometimes come out by soaking or washing in cold water.

Bleaches.—If a stain remains, try one of the following:

Hydrosulfite.—Apply one of the hydrosulfites available at drug stores as a color remover. Follow directions on the package.

Javelle water.—For stains on uncolored linen, cotton, or rayon, dip in Javelle water for 1 minute (no longer), remove the chlorine from the cloth with a sodium thiosulfate solution, rinse well in water. (See p. 6 for more detailed instructions.) Do not use Javelle water to remove stains from silk or wool.

Hydrogen peroxide.—For stains on any white material, add a few drops of ammonia water to hydrogen peroxide. Soak the stains until they disappear and rinse thoroughly in water. One teaspoon sodium perborate added to 1 pint hydrogen peroxide makes a good bleach, but it must be made fresh, as it soon loses its strength.

Egg

Scrape away as much of the stain as possible with a blunt knife. Then sponge with cold water. Never use hot water—heat makes egg stains harder to remove.

Pepsin.—If cold water does not remove the stain completely, sprinkle pepsin powder over the spot. Work it in well and let stand for half an hour. Rinse well.

Grease solvents.—For nonwashable materials, sponge first with cold water. Let dry and then sponge with carbon tetrachloride, gasoline, or other grease solvent.

Fingernail Polish

Acetone or nail-polish removers.—On any material except acetate rayon or vinyon, sponge the stain with acetone or a commercial nail-polish remover.

Grease solvent and banana oil (amyl acetate).—Use this treatment on any material including acetate rayon and vinyon. First wet the stain well with carbon tetrachloride or gasoline; then apply a drop of banana oil to the stain. Brush lightly with a soft cloth, using an upward motion to pick up the dissolved polish. For heavy stains use dry-cleaning soap with the banana oil.

Bleaches.—To remove any color remaining after the polish itself has been dissolved, apply a bleach. Test the cloth for change in color first.

Hydrogen peroxide and sodium perborate.—Sponge with clear water and then with a solution of 1 teaspoon sodium perborate to 1 pint hydrogen peroxide. If the stain still shows, sprinkle powdered sodium perborate on the stain and let stand half an hour. Rinse well with clear water.

Hydrosulfite.—Apply one of the hydrosulfites available at drug stores as a color remover. Follow directions on the package.

Fish Slime

Soak or sponge the stain with a solution made of ½ cup salt and 1 cup vinegar in 2 quarts of water. Rinse well in water; then wash in warm soapsuds.

Flypaper, Sticky

Sponge the stain with carbon tetrachloride or benzene. If the material is washable, soak in kerosene and then wash in warm soapy water.

Fruits and Berries

Treat fruit and berry stains immediately, if possible; they are hard to remove after they dry. Boiling water (if it does not harm the cloth) or sometimes even warm water will remove most fruit stains. It is better not to use soap, as alkalies set some fruit and berry stains. Use the same methods for removing stains from cooked fruits and berries as from fresh.

Washing in warm soapy water sometimes removes stains from citrus fruits, such as grapefruit and lemon. But if the stain is old or the cloth has been pressed before washing, use one of the bleaches described below. If the acid in citrus fruit changes the color of the cloth, restore it with ammonia water or baking soda. (See Acids, p. 10.)

Cold water and glycerine.—For fresh peach, pear, cherry, and plum stains on cotton and linen and for any fruit stain on wool or silk materials (either white or colored), first sponge the stain well with cool water; then work glycerine or a soapless shampoo into the stain, rubbing lightly between the hands. Do not

use soap, as soap sets the stain. Let stand several hours, then apply a few drops of vinegar or oxalic acid, allow to remain for a minute or two, then rinse thoroughly in water.

Boiling water.—Boiling water removes from cotton and linen most fruit stains except peach, pear, plum, and cherry. Never use boiling water on silk or wool. Stretch the stained part over a bowl, fasten it with string, and pour boiling water on it from a teakettle held at a height of 3 or 4 feet so that the water strikes the stain with force. Rubbing alternated with the boiling water is also helpful. If a stain remains, squeeze a little lemon juice on it and place in the sun to dry, or use one of the chemical bleaches.

Bleaches.—If a stain remains, try one of the following:

Hydrogen peroxide and sodium perborate.—Sponge with hydrogen peroxide-sodium perborate mixture (1 teaspoon sodium perborate to 1 pint peroxide). Rinse thoroughly. If the stain persists, sprinkle powdered sodium perborate on the dampened area and let stand for half an hour. Finally rinse well. Always test for change of color on the inside of a hem or seam before using these bleaches. If the color fades, do not use them—just dampen the stain with water and spread in the sun to bleach.

Hydrosulfite.—Hydrosulfites available at drug stores as dye removers are satisfactory for removing fruit stains from any white material. Follow directions on package.

Javelle water.—For stains on uncolored linen or cotton material, dip in Javelle water for 1 minute (no longer), remove the chlorine from the cloth with a sodium thiosulfate solution, rinse well in water. (See p. 6 for more detailed instructions.) Do not use Javelle water on silk or wool.

Glue and Mucilage

Water.—If the material is washable, soak the spot in warm water, or if it is a stubborn stain you may have to boil it. If the stain is known to be casein glue, soak it in cold water.

Acetic acid.—For nonwashable materials, sponge the spot with water, then with acetic acid (10-percent solution) or white vinegar. Rinse well.

Grass and Other Fresh Garden Foliage

Hot water and soap.—If the material is washable, use hot water and soap, rubbing the stain well. If this does not completely remove the stain, use a bleach.

Bleaches.—Try one of the following:

Javelle water.—For stains on uncolored linen, cotton, or rayon, dip in Javelle water for 1 minute (no longer), remove the chlorine from the cloth with a sodium thiosulfate solution, rinse well in water. (See p. 6 for more detailed instructions.) Do not use Javelle water to remove stains from silk or wool.

Hydrogen peroxide and sodium perborate.—Sponge with clear water and then with a solution of 1 teaspoon sodium perborate to 1 pint hydrogen peroxide. If the stain still shows, sprinkle powdered sodium perborate on the stain and let stand half an hour. Rinse well with clear water. Always test for change of color on a sample of the cloth before using these bleaches.

Hydrosulfite.—Hydrosulfites available at drug stores as dye removers are satisfactory in removing grass stains from any white materials. Follow directions on the package.

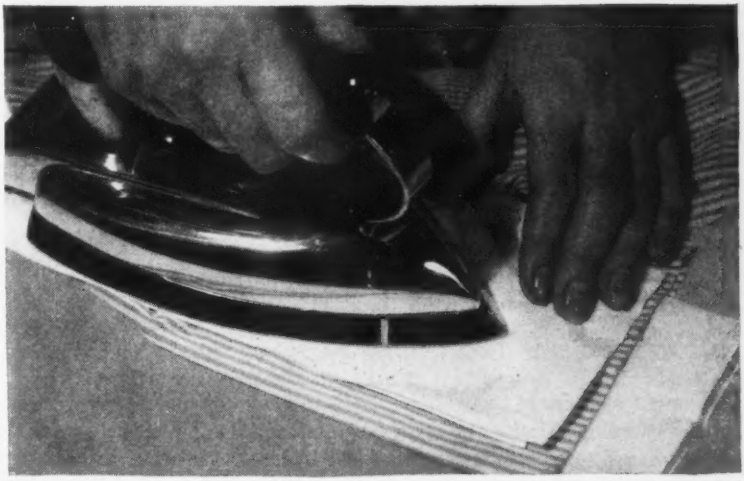
Benzene or denatured alcohol.—On materials that soap and water might injure, sponge the stains with benzene or alcohol. Test them first to be sure they do not change the color of the material. Do not use alcohol on acetate rayon or vinyon unless you dilute it—1 cup denatured alcohol with 2 cups water.

Grease and Oils

Fresh grease spots usually are the pure fat or oil. Old grease spots or stains from automobile, wheel, or machine greases usually contain also more or less dust, dirt, or fine bits of metal. (For road oil and axle grease, see p. 27.) First scrape or wipe off as much of the grease as possible; then treat the stain by one of the following methods:

Soap and water.—If the material is washable, wash in warm sudsy water. Be sure to use plenty of soap on the stained part and rub well between the hands. The soaplike washing agents (soapless shampoos, oils, and lathers) are good to soften grease stains.

Absorbents.—Use cornstarch, French chalk, or white talcum powder for fine materials; corn meal or salt for carpets, rugs, and other coarse materials.



Place a grease or oil stain between paper towels or cleansing tissues and press with a warm iron.

Dust the powder or salt over the spot, let stand until it absorbs the grease or oil, then brush off. Another method is to place the stained part between blotting papers and press lightly with a warm iron. Change the blotting paper as it becomes soiled. Or use cleansing tissues or paper towels in the same way. The advantage of using absorbents is that they do not wet the material or leave rings as water or grease solvents are apt to do.

Grease solvents.—Remove common grease and oils with carbon tetrachloride, gasoline, or benzene. Place a pad of clean cloth or a white blotter beneath the stain and sponge with a clean cloth, moistened with the grease solvent. Work from the wrong side of the material in order to push the dirt and grease out rather than to rub it into the material. Use light, brushing motions, work from the outside of the spot toward the center and spread or "feather out" the solvent into the cloth around the stain until there is no definite edge. Then pat dry with a clean, dry cloth.

If the grease spot contains dirt or fine bits of metal, first loosen the stain by rubbing a little lard, vaseline, or dry-cleaning soap into it. Then sponge with the grease solvent or dip the stain into a small bowl of the solvent.

Another method is to make a paste by mixing cornstarch or talcum with carbon tetrachloride or other dry-cleaning fluid. Spread the paste over the spot; when dry brush it off. Repeat if necessary. The solvent does not spread and is less likely to form a ring if used in this way.

Ice Cream

Ice cream stains contain milk or cream, sugar, sometimes egg, and often coloring. If after trying the following methods, a fruit or chocolate stain remains, follow instructions under Fruits and Berries, page 15, or under Chocolate and Cocoa, page 13.

Cold or lukewarm water.—If the material is washable and the stain contains no highly colored fruit or chocolate, sponge with cold or lukewarm water; then wash in warm soapsuds.

Carbon tetrachloride.—For nonwashable materials, sponge with carbon tetrachloride to remove the greasy part of the stain. Let it dry; then sponge with cold water to remove any stains from the egg and sugar in the ice cream. If this does not remove the stain completely, follow with a pepsin treatment.

Pepsin.—First sponge the stain with cold water, then sprinkle pepsin on the dampened stain, and let it stand half an hour. Brush it off and rinse the spot well. For best results, be sure the material is free from soap or other alkali before applying the pepsin.

Ink

Because inks differ in composition, it is impossible to find removers that are equally effective for all types of ink spots. Each of the methods mentioned below is satisfactory with some type of ink. For most ink spots, it is necessary to try several methods, beginning always with the simplest and that least likely to harm the cloth.

India or drawing ink

Denatured alcohol, carbon tetrachloride, and benzene.—Place a pad of cloth or blotter under the stain and sponge with one of these solvents. Then rub glycerine (use glycerine only with alcohol) or a dry-cleaning soap into the stain and finally rinse out with the solvent. If this does not remove the stain, let the stain dry; then wet with water and rub in some soapless shampoo or soapless lather (soaplike washing agent) to help soften the stain. Or use strong soapsuds to which a few drops of ammonia water have been added. Alcohol must not be used on acetate rayon or colored materials.

Printing ink

Use one of the following agents for removing printing-ink stains:

Lard or vaseline.—Rub the stain with lard or vaseline and work it well into the cloth. If material is washable, wash with plenty of soap and water; otherwise sponge with carbon tetrachloride, gasoline, or other grease solvent.

Turpentine.—Soak the stain for a few minutes in turpentine and then sponge with carbon tetrachloride, alcohol, or other dry-cleaning fluid. Do not use alcohol on acetate rayon or colored materials.

Kerosene.—To remove printing from flour bags and other bags, soak in kerosene for several hours. Then wash thoroughly in soap and hot water and spread on the grass in the sun to dry.

Writing ink

In removing writing-ink stains it usually is necessary to try various methods. Always start with the simplest method and the one least likely to harm the cloth.

Absorbents.—If the stain is still wet, spread corn meal, salt, French chalk, cornstarch, or talcum powder on the stain to remove any excess ink and to keep it from spreading. Work the powder into the stain. Shake it off as it becomes soiled and repeat the process. When the dry absorbent fails to take up more ink, make the absorbent into a paste with water or with a mixture of 1 part water and 1 part alcohol and apply again. Let dry and brush off.

Glycerine and water or soap and water.—If the material is washable, pour either glycerine or one of the soapless shampoos on the fresh stain. Rub lightly between the hands, rinse, and apply glycerine again as long as any ink comes from the stain. Rinse with clear water. Washing with soap and warm water will remove some types of ink.

Bleaches.—If the above treatments do not remove the stain, try a bleach. But use bleaches sparingly on colored materials.

Oxalic acid.—Soak the stain for a few seconds in a solution of oxalic acid (3 tablespoons of the crystals of the acid to a pint of water). Or sponge the stain well with cold water, then stretch the stain over a bowl of hot water, and apply crystals of oxalic acid directly to the stain. Rinse by dipping in the hot water and finally in water to which a few drops of ammonia water have been added. Do not use on weighted silk.

Hydrosulfite.—Sponge with a hydrosulfite solution and rinse quickly.

Iodine

Soap and water.—If the material is washable, soap and water will often remove a fresh stain. Or moisten with water and place either in the sun, over a warm radiator, or hold in the steam from a boiling teakettle.

Denatured alcohol.—On materials that water would injure, sponge with alcohol. On acetate rayon and colored materials be sure to dilute the alcohol—1 cup denatured alcohol to 2 cups water.

Sodium thiosulfate ("hypo").—Sponge the stain or dip in a solution of 1 tablespoon of the "hypo" to 1 pint of water. Rinse well in water.

Iron Rust

Use any of the methods given below to remove iron-rust stains from white materials. Test remover on sample of cloth before using on colored materials.

Lemon juice.—Spread the stain over a pan of boiling water and then squeeze lemon juice on it. After a few minutes rinse; then repeat the process. This method is rather slow, but does not harm delicate white cottons or linens. Another method is to sprinkle the stain with salt, squeeze lemon juice on it, and spread in the sun to dry. Add more lemon juice if the stain still shows. Rinse well.

Oxalic acid.—Spread the stained article over a bowl of hot water and apply a few drops of oxalic acid solution (3 tablespoons of the crystals to 1 pint of water). Or put the crystals of acid directly on the stain and moisten with hot water. Rinse in hot water, and repeat until the stain disappears. Do not use on weighted silk.

Cream of tartar.—Boil the stained article in a liquid made up of 4 teaspoons of cream of tartar to 1 pint of water. Rinse thoroughly.

Hydrosulfite.—Hydrosulfites available at drug stores as color removers or dye-stripping agents also will remove rust stains. Follow directions given on the package. Do not use on weighted silks.

Linseed Oil

Sponge with carbon tetrachloride or benzene. Treat as for cod-liver oil stains.

Lipstick and Rouge

Vaseline and carbon tetrachloride.—If water spots the cloth, work vaseline or lard into the stain. Then either sponge with carbon tetrachloride or dip the stained part in a bowl of the solvent. If a trace of color remains sponge with denatured alcohol. On acetate rayon and colored materials, dilute the alcohol—1 cup denatured alcohol to 2 cups water.

Glycerine, soap, and water.—If the material is washable, first loosen the stain as above with glycerine or vaseline. Then launder as usual. If soap or other alkalies are applied before the stain is loosened, they are apt to set it.

Hydrogen peroxide and sodium perborate.—Sponge with sodium perborate–hydrogen peroxide mixture (1 teaspoon sodium perborate to 1 pint peroxide. Rinse thoroughly. If the stain persists, sprinkle powdered sodium perborate on the dampened area and let stand for half an hour. Finally rinse well. Be sure to test the cloth for colorfastness before using these bleaches.

Meat Juice or Gravy

Sponge meat-juice or gravy stains with cold or lukewarm water. Never use hot water; it sets the stain. If a grease spot remains, launder washable materials in warm soapy water. If the cloth is not washable, use an absorbent powder or a grease solvent.

Absorbents.—Dust the powder over the stain, let it stand until it absorbs the grease, then brush off.

Solvents.—Sponge with carbon tetrachloride, gasoline, or benzene.

Medicines

Because of the great number and variety of substances used in medicines, it is not possible to give methods for removing all such stains. If you know what the medicine is made of, it will aid in choosing the remover. For instance, a tarry or gummy medicine can be treated in the same way as a tar spot (see p. 27); a medicine containing much iron can be removed in the same way as iron rust (see p. 20). Medicines in a sugar sirup usually can be washed out with water; those dissolved in alcohol sometimes can be removed by sponging the stain with alcohol. Many of the medicines used in swabbing sore throats contain silver nitrate and should be sponged with a solution of sodium thiosulfate ("hypo")—1 teaspoon of the crystals in 1 cup of water.

If you cannot find out what kind of medicine caused the stain, you may have to try several methods to find one that will do the job. Each of the following methods will remove certain medicine stains.

Boiling water.—For washable materials, pour boiling water on the stain from a height of 3 or 4 feet, as for fruit stains, or launder in warm soapy water.

Denatured alcohol or carbon tetrachloride.—Some color stains can be sponged or soaked out with alcohol. Sponge greasy stains with carbon tetrachloride. A dry-cleaning soap helps to loosen them. Finally sponge with fresh carbon tetrachloride.

Bleaches.—Use bleaches only on white materials. Try one of the following:

Hydrosulfite.—Use one of the hydrosulfite dye-stripping agents available at drug stores. Follow instructions on the package.

Javelle water.—For stains on linen, cotton, or rayon, dip in Javelle water for 1 minute (no longer), remove the chlorine from the cloth with a sodium thiosulfate solution, rinse well in water. (See p. 6 for more detailed instructions.) Do not use Javelle water on silk or wool.

Mercurochrome

Mercurochrome stains are very hard to remove unless you treat them promptly. Proceed as follows:

Denatured alcohol, glycerine, and laundering.—First sponge the stain well with a liquid made of equal parts of alcohol and water. (On acetate rayon and colored materials use 1 part alcohol and 2 parts water). Next work glycerine into the cloth to help loosen the stain, and continue using as long as any color bleeds from the stain. Then wash well in soapsuds, and rinse with water to which a few drops of ammonia water have been added.

Acetic acid.—If a stain remains after the above treatment, apply 10-percent acetic acid with a medicine dropper; then rinse well in water.

Bleaches.—If the above treatments do not completely remove the stain, use a bleach.

Javelle water.—For stains on uncolored linen, cotton, or rayon, dip in Javelle water for 1 minute (no longer), remove the chlorine from the cloth with a sodium thiosulfate solution, rinse well in water. (See p. 6 for more detailed instructions.) Do not use Javelle water on silk or wool.

Sodium perborate.—Sponge with a sodium perborate solution (4 tablespoons of the perborate in a pint of lukewarm water) or dampen the stain with water and dust the powdered sodium perborate on it. Rinse thoroughly. Always test for the effect on the color of the cloth before using bleaches.

Sodium hydrosulfite.—This color remover is available at drug stores. It may be used safely on most white materials. Follow directions on the package.

Metallic Stains

The tarnish of copper, brass, tin, and other metals often stains textiles. To remove, apply vinegar, lemon juice, or a 10-percent solution of acetic acid. Rinse well as soon as the stain has dissolved. Do not use chlorine bleaches or sodium perborate to remove these stains.

Mercury or quicksilver removes lead or solder stains from rugs or clothing. First scrape off as much of the lead as possible with a dull knife. Then pour mercury on the stain and work with a stick until the mercury absorbs the stains.

Mildew

Mildew spots must be treated when fresh, before the mold growth has a chance to weaken the cloth.

Soap and water.—On washable material, soap and water will remove very fresh stains. Drying on the grass in the sun helps to bleach the spots.

Bleaches.—Try a bleaching agent if soap and water do not remove the stain. Be sure to test for colorfastness on a hidden part of the garment.

Lemon juice.—Moisten the stain with lemon juice and salt and place in the sun. This often removes slight stains.

Javelle water.—Old stains on cotton, linen, or rayon may be bleached out with Javelle water. Dip the stain in the Javelle water for 1 minute (no longer), remove the chlorine from the cloth with a sodium thiosulphate solution, rinse well in water. (See p. 6 for more detailed instructions.) Do not use Javelle water on silk or wool.

Sodium perborate.—Soak the stain in a sodium perborate solution (4 tablespoons perborate to 1 pint lukewarm water). Or dampen the stain with water and sprinkle the perborate powder directly on the stain. Rinse after either treatment.

Milk and Cream

See Ice Cream, p. 18.

Mimeograph-Correction Fluid

Follow instructions given under Fingernail Polish, page 15.

Mucus

Soak in lukewarm salt water (about 2 cups salt to 1 gallon water) or in weak ammonia water (2 tablespoons ammonia water to each gallon water). Rinse well with cold water and launder as usual.

Mud

Let the mud stain dry, then brush well. Sponge with clear water, or use soap and water if it will not harm the cloth. Sponging with alcohol will help to remove the last traces of the stain. On colored materials and acetate rayon dilute the alcohol—1 cup denatured alcohol to 2 cups water.

Mustard

Glycerine and soap and water.—If the material is washable, work glycerine into the stain, rub lightly between the hands, and then wash the article in soap and water.

Denatured alcohol.—If water spots the cloth, sponge the stain with alcohol. Since alcohol makes some colors run, test a sample of the cloth to be sure it does not harm the color. On acetate rayon sponge with dilute alcohol—1 cup denatured alcohol to 2 cups water.

Bleaches.—Try one of the following, but use sparingly on colored materials and do not use on weighted silks.

Hydrosulfite.—Sponge with a hydrosulfite solution (2 teaspoons in 1 pint of warm water) and rinse quickly.

Oxalic acid.—Apply oxalic acid solution with a medicine dropper (see p. 7) and rinse well with clear water. Sponge with weak ammonia water, borax or sodium perborate solution, to neutralize the acid.

Paints—Oil Paints, Varnishes, Enamels

Treat oil paint, varnish, and enamel stains quickly, since a dried or hardened paint stain is almost impossible to remove. Scrape off as much of the paint or varnish as possible before using any remover. If the stain has hardened, apply a solvent on both sides and give time for it to soften. Do not rub too hard; rubbing roughens the cloth. Use one of the following methods:

Soap and water.—If the material is washable, remove fresh stains by washing with plenty of soap. If the stain has dried, soften it first by rubbing oil, lard, or vaseline into it.

Turpentine or other solvents.—Sponge the stain with pure turpentine or, if the spots are large or scattered, wash the whole article in it. Or soak in a liquid of equal parts ammonia water and turpentine, rinse several times in fresh turpentine, wash in soapy water. Carbon tetrachloride, kerosene, alcohol, or benzene may be applied in the same way as turpentine. Benzene is good for the usual type of spar varnish. Alcohol will remove stains of shellac varnish, but never use alcohol on acetate rayon or vinyon.

Paint and varnish remover.—Equal parts of benzene, carbon tetrachloride, and amyl acetate (banana oil) make a very good paint remover. Apply the remover and rub in a dry-cleaning soap to help loosen the stain. Finally rinse out with carbon tetrachloride.

Pencil Marks

Indelible pencil

Do not use water on indelible pencil marks as this spreads the dye and makes the stain harder to remove. Use one of the following:

Denatured alcohol.—Soak the stain in alcohol. If carbon marks remain, sponge with soap and water. Do not use alcohol on acetate rayon. Test all dyed cloth for colorfastness.

Bleaches.—Remove the dye with a bleaching agent.

Javelle water.—For stains on uncolored cotton, linen, or rayon, dip in Javelle water for 1 minute (no longer), remove the chlorine from the cloth with a sodium thiosulfate solution, rinse well in water. (See p. 6 for more detailed instructions.) Do not use Javelle water on silk or wool.

Hydrogen peroxide and sodium perborate.—For other materials sponge with a mixture of 1 teaspoon sodium perborate to 1 pint peroxide. Rinse well.

Lead pencil

A soft eraser sometimes will remove the marks, especially on stiff or starched materials. If the material is washable, rub soapsuds into the stain and launder as usual. Sponge woolen materials with clear water or with a solution of equal parts alcohol and water.

Perspiration Stains

Perspiration of the body is usually acid, so you can sometimes restore colors changed by a perspiration stain by treating with an alkali. Dampen the stain with water and hold it over the fumes from an open ammonia water bottle. (See Acids, p. 10.) Old stains may be alkaline; then try vinegar. (See Alkalies, p. 11.) However, colors changed by perspiration cannot always be restored, particularly if the stain is an old one.

To remove perspiration odors, sponge the stained part with warm water to which a few drops of vinegar have been added, sprinkle powdered pepsin over the stain, work it well into the cloth, and let stand 1 to 2 hours, keeping the spot moist. Then brush off the powder and rinse well.

Yellowish perspiration stains on white material can be removed by:

Soap and water.—If the material is washable, bleach in the sun after washing in soap and water.

Bleaches.—For a stubborn stain, try a bleach.

Hydrogen peroxide.—Sponge with hydrogen peroxide or a mixture of 1 teaspoon sodium perborate to 1 pint peroxide. Rinse with water.

Sodium hydrosulfite.—Quickly dip the stain into a sodium hydrosulfite solution (2 teaspoons sodium hydrosulfite to 1 pint water). Rinse immediately. First test the colorfastness of the cloth to this bleach.

Rubber Cement

To remove rubber cement either sponge or dip the cloth in carbon tetrachloride, Stoddard solvent, gasoline, or benzene. If the stain has dried, rub in vaseline or dry-cleaning soap to loosen it. Then apply the carbon tetrachloride or other solvent.

Salad Dressings

The acid of the vinegar or lemon juice in salad dressings may injure the color of the material. Apply a mild alkali such as baking soda or weak ammonia water immediately to restore the color. (See Acids, p. 10.) Then use one of the following to remove the stain:

Soap and water.—Sponge delicate, washable materials with lukewarm water. Do not use hot water if egg or cream was used in making the salad dressing. Use soap if it will not harm the cloth.

Grease solvents.—Sponge the stain with lukewarm water, let dry, and then sponge with carbon tetrachloride, Stoddard solvent, gasoline, or benzene.

Absorbents.—Absorbent powders are particularly good for splatters of salad oil. Dust cornstarch or talcum powder over the spot, allow it to absorb the oil or grease, then brush off. Or make a thick paste by mixing the powder with carbon tetrachloride or other grease solvent, spread it on the spot, let dry, and brush off. Repeat if necessary. Another method is to put the stained cloth between cleansing tissues and press with a warm iron.

Scorch

You can usually remove light scorch stains from cotton and linen materials, but wool and silk can seldom be restored to their original condition. Brushing with emery paper may improve wool, however. Try the following:

Soap and water.—If the cloth is washable, soap and water will remove very slight stains. After washing, place the article in the sun for a day or two; it may bleach out any remaining traces of the stain.

Hydrogen peroxide.—If the stained material is white, use hydrogen peroxide. Dampen a white cotton cloth with the peroxide and lay it on the stain. Cover with a clean dry cloth; then press with a medium warm iron. If the hydrogen peroxide soaks through the top cloth, replace with a dry one. Ironing directly on the cloth moistened with peroxide or on the dampened stain itself, after the cloth has been removed, will cause rust stains on the garment. Repeat the treatment, until the stain is completely removed. Rinse well.

Light scorch stains may be removed also by sponging with hydrogen peroxide to which sodium perborate has been added (1 teaspoon sodium perborate to 1 pint peroxide. Rinse well with water.

Shoe Dressings

Soap and water.—If the material is washable, remove fresh stains from one of the paste dressings by sponging or washing thoroughly with plenty of soap. For spots caused by white dressings, sponge first with water, then with soap and water.

Solvents.—Sponge well with carbon tetrachloride or turpentine. Glycerine, lard, or vaseline worked into the stain first helps to loosen it. For liquid dressings and for stains on wool, sponge with denatured alcohol. Do not use alcohol on acetate rayon or colored cloth.

Bleaches.—If a dye stain remains, remove with a bleaching agent.

Hydrosulfite.—Apply one of the hydrosulfites available at drug stores as a color remover. Follow directions on the package.

Hydrogen peroxide or sodium perborate.—Sponge the stain with hydrogen peroxide or with a sodium perborate solution (p. 7) or sprinkle sodium perborate powder on the moistened stain directly. Rinse well.

Soap

Ironing material from which the soap has not been well rinsed may cause a stain much like iron rust. Washing with soap and water usually removes it. Be sure to rinse well. Bleaching in the sun afterwards is sometimes helpful.

Soot and Smoke

Absorbents with solvents.—First brush the stain; then sprinkle with an absorbent powder—French chalk, cornstarch, corn meal, or salt. Work the

powder around until soiled and brush it off. Then if the material is washable, sponge or wash with soap and water. If water harms the cloth, first use an absorbent; then sponge the stain with one of the grease solvents—carbon tetrachloride, Stoddard solvent, or gasoline.

Another method is to make a paste by mixing an absorbent powder with carbon tetrachloride or other solvent, spread it on the stain, then brush it off when dry.

To remove the odor of smoke from a garment, have it dry-cleaned.

Sugar Sirups

If the material is washable, wash out sugar-sirup stains with soap and water. For more delicate materials, sponge with clear water.

Tar, Road Oil, Asphalt, Axle Grease, Pitch

Stains made by tarlike substances are hard to remove, especially from cotton material. First rub in vaseline or lard to soften the stain, then sponge with one of the grease solvents—carbon tetrachloride, Stoddard solvent, gasoline, benzene—or dip the article in the liquid and rub lightly between the hands. Repeat the treatment until the stain is removed. If the material is washable, use warm soapy water after rubbing in the vaseline or lard.

For stains on carpets or rugs, scrape off as much as possible with a dull knife. Then sponge with the grease solvent, using a brushing motion so that you do not rub the stain into the carpet.

Tobacco

Treat stains from the tarry substances in the stem of a pipe in the same way as tar. Use one of the following methods to remove tobacco juice stains:

Cold water and glycerine.—Sponge with cold water; then work warm glycerine into the stain. Let stand for half an hour, and wash with soap and water. If the stain cannot be completely removed by washing, bleach it in the sun. Moistening it with lemon juice makes it disappear more quickly.

Wood or denatured alcohol.—To remove traces of color remaining on wool materials after the above treatment, sponge with alcohol.

Bleaches.—Try one of the following to remove remaining tobacco stains:

Hydrogen peroxide or sodium perborate.—Sponge with hydrogen peroxide or with sodium perborate solution (4 tablespoons to a pint of water). Or sprinkle powdered sodium perborate on the moistened stain. Rinse thoroughly.

Javelle water.—For stains on cotton or linen, dip the stain in Javelle water for 1 minute (no longer), remove the chlorine from the cloth with a sodium thiosulfate solution, rinse well in water. (See p. 6 for more detailed instructions.) Do not use Javelle water on silk or wool materials. Be sure to test the cloth for colorfastness before applying this bleach.

Tomato Juice and Catsup

Cold water and glycerine.—Sponge the stain thoroughly with cold water to remove all the loose foodstuff. Next work glycerine into the stain, and let stand for half an hour. Then wash with soap and water.

Hydrogen peroxide or sodium perborate.—Remove any remaining stain by sponging with hydrogen peroxide or with sodium perborate solution (4 tablespoons to 1 pint of water). Sponge or rinse with cold water.

Urine

These stains differ so in composition that it is impossible to give methods which will be successful in all cases. If the color of the cloth is not destroyed but only changed, it may be restored. Normal human urine is usually acid, as is also that of all meat-eating animals. Therefore sponge such stains with a weak ammonia or soda solution. (See Acids, p. 10.) If the stain is alkaline, sponge with lemon juice or vinegar. (See Alkalies p. 11.)

Warm water followed by salt and water.—Sponge with warm water. Warm salt water may be used (about ½ cup salt to 1 quart water). Apply and let stand 15 minutes; then sponge with clear water.

Hydrogen peroxide or sodium perborate.—Apply a few drops of hydrogen peroxide (see p. 7) or sponge with a mixture of 1 level teaspoon sodium perborate to 1 pint peroxide. Powdered sodium perborate may be sprinkled on he dampened stain. Rinse thoroughly in water.

Vaseline

Grease solvents.—Sponge fresh stains with carbon tetrachloride, turpentine, or gasoline. Soaking in one of these solvents will usually remove an old stain.

Absorbents.—Spread cornstarch or talcum on a fresh stain, let stand until it absorbs the grease, then brush off. Or make a paste with the powder and carbon tetrachloride, spread the paste over the stain, brush off when dry.

Walnut (Black)

Soap solution.—Boil washable materials in soapy water (a half-inch cube of laundry soap to each cup of water). This will completely remove fresh stains on cotton or linen. If this treatment leaves a gray color, as it sometimes does with an old stain, treat with Javelle water as follows:

Javelle water.—Mix Javelle water with an equal amount of hot water. Soak the stained place for 1½ hours in this solution, and rinse thoroughly. Then treat with oxalic acid solution (1 teaspoon oxalic acid to 1 pint water), and rinse again. This will remove a week-old stain and will not seriously injure the material. Soaking the stain in Javelle water of full strength, however, rots the material. Do not use Javelle water on silk or wool.

Water Spots

Some silks, rayons, and wools are spotted by water. To remove such spots, dampen the entire material evenly, either by sponging with clean water or by shaking in the steam from a briskly boiling teakettle. Then press it while still damp. Scratching with the fingernail or a stiff brush or rubbing the cloth between the hands will sometimes remove the spot.

White Sauces, Cream Soups

If the material is washable, laundering in warm soap and water will remove these spots. For nonwashable materials, sponge with warm water, let dry, then sponge with a grease solvent—carbon tetrachloride, gasoline, or benzene.

Index to Stains

	Page
Acids	10
Adhesive tape	10
Alcoholic beverages	10
Alkalies	11
Argyrol	11
Asphalt	27
Axle grease	27
Beer. *See* Alcoholic beverages.	
Berries	15
Beverages. *See* Alcoholic beverages; Chocolate; Coffee.	
Blood	12
Bluing	12
Candle wax, colored	12
Candy	12
Carbon paper	13
Catsup	28
Cement, rubber	25
Cherry. *See* Fruits.	
Chewing gum	13
Chocolate	13
Cocoa	13
Cod-liver oil	13
Coffee	14
Cream. *See* Ice cream.	
Cream soups	29
Dyes	14
Egg	14
Enamel paint	24
Fingernail polish	15
Fish slime	15
Fish oil. *See* Cod-liver oil.	
Flypaper, sticky	15
Foliage	16
Fruits	15
Glue	16
Grapefruit. *See* Fruits.	
Grass	16
Gravy	21
Grease	17
Ice cream	18
Ink	18
Iodine	20
Iron rust	20
Lemon. *See* Fruits.	
Linseed oil	20
Lipstick	20
Liquor. *See* Alcoholic beverages.	
Mayonnaise. *See* Salad dressings.	
Meat juice	21
Medicines	21
See also Argyrol; Mercurochrome.	
Mercurochrome	22
Metallic stains	22
Mildew	22
Milk. *See* Ice cream.	
Mimeograph-correction fluid. *See* Fingernail polish.	
Mucilage	16
Mucus	23
Mud	23
Mustard	23
Nail polish	15
Oil	17
See also Cod-liver oil; Linseed oil; Road oil.	
Oil paints	24
Orange. *See* Fruits.	
Paints	24
Paraffin. *See* Candle wax, colored.	
Peach. *See* Fruits.	
Pear. *See* Fruits.	
Pencil marks	24
Perspiration	25
Pitch	27
Plum. *See* Fruits.	
Road oil	27
Rouge	20
Rubber cement	25
Running colors	14
Salad dressings	25
Sauces, white	29
Scorch	26
Shoe dressings	26
Silver nitrate. *See* Medicines.	
Sirups	27
Smoke	26
Soap	26
Soft drinks	10
Soot	26
Soups, cream	29
Sugar sirups	27
Tannin. *See* Alcoholic beverages; Coffee; Fruits.	
Tar	27
Tea	14
Tobacco	27
Tomato juice	28
Urine	28
Varnish	24
Vaseline	28
Vinegar. *See* Acids.	
Walnut, black	28
Water spots	29
Wax	12
White sauces	29
Wine. *See* Alcoholic beverages.	

U. S. GOVERNMENT PRINTING OFFICE: 1942

For sale by the Superintendent of Documents, Washington, D. C - - - - Price 5 cents